Post Graduate Diploma in Computer Application

Course Duration-One year

List of Modules:

Paper Code & Name		Scheme of Marks		
Semester – I		**Max. Mark**	**Min. Mark**	**Total**
PGDCA1.1	Fundamental of Computer CE+AA (Internal)	75 25	30 10	100
PGDCA1.2	PC Package CE+AA (Internal)	75 25	30 10	100
PGDCA1.3	Operating System CE+AA (Internal)	75 25	30 10	100
PGDCA1.4	Programming in C CE+AA (Internal)	75 25	30 10	100
PGDCA1.5	Practical and Viva-Voce P C Package & Programming in C	100	40	100
	Total	500	225 (45% Passing Marks)	500

Paper Code & Name		Scheme of Marks		
Semester – II		Max. Mark	Min. Mark	Total
PGDCA 2.1	Visual- Basic CE+AA (Internal)	75 25	30 10	100
PGDCA 2.2	Database Management System CE+AA (Internal)	75 25	30 10	100
PGDCA 2.3	Data Communication and Computer Networking CE+AA (Internal)	75 25	30 10	100
PGDCA 2.4	OOPs Programming in C++ CE+AA (Internal)	75 25	30 10	100
PGDCA 2.5	Practical and Viva-voce Visual Basic & OOPs programming in C++	100	40	100

PGDCA SEMESTER-I

PAPER CODE-1.2

FUNDAMENTAL OF COMPUTER

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 5 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -5 Marks each =5×5=25 Marks
2. 5 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 words) 10×5=50 Marks

COURSE OUTCOMES

- Bridge the fundamental concepts of computers with the present level of knowledge of the students.
- Student will come to know about different input and output devices.
- Understand the basics of digital computer along with different storage unit.
- Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet
- Understand different types of software .

SYLLABUS

UNIT – I:

Introduction to Computer system: characteristics and capabilities. Computer Hardware and Software: Block Diagram of a Computer, Different Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analogue, Digital, Hybrid, General and Special Purpose Computers. Generation of Computers.

UNIT – II:

Introduction to Input Devices: Categorizing Input Hardware, Keyboard, Direct Entry – Card Readers, Scanning Devices – O.M.R., Character Readers, Thumb Scanner, MICR, Smart Cards, Voice Input Devices, Pointing Devices – Mouse, Light Pen, Touch Screen. **Computer Output:** Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche (COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies, Projectors, Speakers.

UNIT - III :

Central Processing Unit: The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory (ROM). **Storage Devices:** Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods – Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers - Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM.

UNIT - IV :

System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems. Boot Loader, Diagnostic Programs, BIOS, Utility Programs. **Application Software:** Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages. **Computer Languages:** Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler.

UNIT – V:

Operating System and Linux Introduction, Uses of OS, Functions of OS, booting process, Types of Reboot, Booting from different OS, Types of OS, DOS, Windows, Linux Open source Software concept and evolution of Linux; Features of Multi-User Operating System; Structure of Linux OS; Security Features of Linux, File System, Directory Structure and related commands. Linux Editors & editor commands, Linux commands cd, md, rm, mv, cp, ls, cat, find, grep.

Books Recommended:

1. Computer Fundamentals, P. K. Sinha, BPB Publications, Sixth Edition.
2. Introduction to Information Technology, V. Rajaraman, PHI, Second Edition.
3. Operating System Concepts, Silberchartz, Galvin and Gagne, Wiley India Edition
4. Unix Concepts and Applications, Sumitabha Das, McGarw hill

PGDCA SEMESTER-I

PAPER CODE-1.3

PC Package

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 05 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -3 Marks each =5×5=25 Marks
2. 05 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 works) =5×5=50 Marks

COURSE OUTCOMES

After completion of the course,

- Students would be able to documents, spreadsheets, make small Presentations and would be acquainted with internet.
- This subject helps in understanding the basics of office automation task.

SYLLABUS

UNIT–I :Working with MS-Word

Introduction to word processing's software and it's features, Creating new document, Saving documents, Opening and printing documents. Home Tab: Setting fonts, Paragraph settings, various styles (Normal, Nospacing, Heading 1, Heading2, Title, Strong), Find & replace, Format painter, Copy paste and paste special. Insert Tab: Pages, Tables, pictures, clipart, shapes, header & footer, word art, equation and symbols. Page Layout Tab: Page setup, page Background, Paragraph (indent and spacing).Mailing Tab: Create envelops and Labels, Mail merge. Review Tab: Spelling and grammar check, New comment, Protect document, View Tab: Document views, Zoom, Window (New window, Split, Switch window).

UNIT-II: Introduction to MS-Excel

Introducing Excel, Use of excel sheet, Creating new sheet, Saving, Opening, and printing workbook. Home Tab: Font, Alignment, Number, Styles and cells and editing, Conditional Formatting. Insert Tab: Table, Charts (column chart, Pie chart, Bar chart, Line chart) and Texts (header & footer, word art, signature line).Page Layout Tab: Page setup options, Scale to it(width, height, scale). Formulas Tab: Auto sum (sum, average, min, max),logical(IF, and, or, not, true, false), Math & trig(sin,cosine,tangent,ceil,floor,fact,mod,log),watchwindow.Data Tab: Get external data from MS Access, Sort and filter options, Data validation, Group and ungroup. Review Tab: Protects Sheet, Protect workbook, Share work book. View Tab: Page breaks, Page layout, Freezing panes, Split and hide.

UNIT-III :Advanced Excel

Data analysis, Financial Modeling, Decision Making, Dashboard Reporting. Project Management and its Templates- Gantt Chart Template, Dashboard Template, Status Report Template, Action Plan Template, Estimate Template etc. Budgeting and Forecasting, Inventory Management, advance excel formula- index match, if combined with and / or, offset combined with sum or average, choose, xnpv and xirr, sumif and countif, pmt and ipmt, concatenate ,Vlookup, Hlookup etc.

UNIT-IV: Working with MS-PowerPoint

Introducing power point, Use of power point presentation, Creating new slides saving, Opening and printing. Home Tab: New slide, Layout, Reset, Delete, Setting text direction, Align text, Convert to smart art,drawing options. Insert Tab: Table, picture, clipart, photo album, smart art, shapes and chart, movie and sound, hyperlink

and action, textbox, word art, object. Design Tab: Page setup options. slide. Orientation, applying various themes, selecting background style and formatting it. Animations Tab: Custom animation for entrance,exit and emphasis, applying slide transition, setting transition speed and sound, animation on rehears timing.Slides how & view Tab: Start slide show options, setup options. View tab: Presentation views,colorsandwindow option.

UNIT-V:Working with MS-Access

Front end and backend of application, Introduction to DBMS, Features of DBMS, Creating blank databases, saving accdb format. Defining data types MS-access. Home Tab: Datasheet view, design view, pivot chart view, pivot table view, sort and filter options. Create Tab: Creating tables, Creating reports, Query wizard. External Data Tab: importing data from access and excel sheet, exporting data to excel and MS word. Datasheet Tab: Relationships, Fields and columns options, Data type and formatting options.

Recommended book:

1. Microsoft office 2013 fundamentals: L. Story, D. Walls.
2. M. S. Office : S.S. Shrivastava, Firewall Media
3. Office 2016in easy step: Michael price & Mike McGrath
4. Excel-Based Decisions in Managerial Accounting:By: Teresa Stephenson, Jason Porter
5. Excel for Marketing Managers (Excel for Professionals series) Kindle Edition
6. Managerial Economics Using Excel: David Whigham

PGDCA SEMESTER-I

PAPER CODE-1.4

Operating System

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 05 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -3 Marks each =5×5=25 Marks
2. 05 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 works) =5×5=50 Marks

Course Outcomes

- Student will come to know the basics of how does operating system work.
- They will inculcate knowledge of basic functions of operating system, like memory management, disk, scheduling etc.
- Students develop internal knowledge of operating system .

SYLLABUS

UNIT-I:Operating System

Operating System, operating enviroment, history of operating system operating system component, Operating System service, types of operating system,Operating system interaction, important Operating Systems.

UNIT-II:Process management and deadlock

Introduction, definition of process, process state, process scheduling, operation on process, interprocess communication

Process Scheduling: Basic concept, Scheduling criteria scheduling algorithm, multiple processor scheduling

UNIT-III:Dead lock

System model, deadlock characterization, method of handling deadlock, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock.

Memory management: Introduction , swapping , contiguous memory allocation , paging , segmentation Virtual Memory :Definition of virtual memory, Demand paging , Copy on write , page replacement , allocation of frame , thrashing , memory mapped file.

UNIT-IV:File System:

file concept ,Access method , Directory structure , file system mounting , file sharing , protection, file system Structure , file system implementation , directory implantation , allocation method , NFS.I/O System: Introduction, I/O hardware, application I/O interface, kernel I/O subsystem, streams.

UNIT-V:Introduction to Unix

history of Unix , why Unix , Unix components, logging on to Unix system , using Unix commands, terminal control keys, changing your pass word getting help. UNIX file organization: file types, file names, file and directory commands file access permission, standard UNIX file system, command summary

Text editor: the standard editor VI, VI provides commands for escape mode, VI commands, setting the VI environment.

UNIX shells: shell, redirection and piping, metacharacter, shell variable, shell programs, commands line argument. System administration: responsibilities, super user, about devices connected with the system, process termination, message of the day, displaying free space, wall command, tar command, adding of removing user, shutdown the system.

Recommended Books:

1. Operating system concepts: Abraham Silberschatz, PeterB. Galvin
2. Operating System Concepts & design: Milan Milenkovic, MGH
3. An Introduction to Operating Systems: Harvey M. Dietel, Addison Welsey
4. Unix Concepts and Applications: Sumitabha Das, McGarw hill

PGDCA SEMESTER-I

PAPER CODE-1.4

Programming in C

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 05 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -3 Marks each =5×5=25 Marks
2. 05 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 works) =5×5=50 Marks

COURSE OUTCOMES

After the course the students are expected to be able to (this is what the exams will test) :

- Identifysituations where computational methods and computers would be useful.
- Given a computational problem, identify and abstractthe programming task involved.
- Approach the programming tasks using techniques learned and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.
- Write the program on a computer, edit, compile, debug, correct, recompile and run it.
- Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.

SYLLABUS

UNIT – I: Introduction

Introduction Character set, Identifiers and Keywords, Variables, Displaying variables, Reading Variables, Character and Character String, Qualifiers, Type define Statements,Value initialized variables, Constants, Constant Qualifier, Operators and Expressions,Operator Precedence and Associativity, Basic input output: Single Character I/O,General Outputs, Types of Characters in format string, Scanf with specifiers, Searchset Arrangements and Suppression Character, Format Specifiers for scanf.

UNIT – II: Control Structures & Functions:

Control Structure: if-statement, if-else statement, multiple decisions, nested if statements, switch statement, for-loop, while-loop, do-while loop, break statement, continue statement, goto statement.
Functions: The main function, functions accepting more than one parameter, User defined and library functions, Concept associatively with functions, function parameter, Return value, recursion comparisons of Iteration and recursion variable length argument list.

UNIT – III: Arrays & Pointers:

Scope and Extent, Arrays, Strings, Multidimensional Arrays, Strings, Array of Strings, Function in String, Pointers: Definition and use of pointer, address operator, pointer variable, referencing pointer, void pointers, pointer arithmetic, pointer to pointer, pointer and arrays, passing arrays to functions, pointer and functions, accessing array inside functions, pointers and two dimensional arrays, array of pointers, pointers constants, pointer and strings.

UNIT – IV: Structure and Union:

Declaring and using Structure, Structure initialization, Structure within Structure, Operations on Structures, Array of Structure, Array within Structure, Creating user defined data type, pointer to Structure and function. Union, difference between Union and Structure, Operations on Union, Scope of Union.

UNIT – V: Dynamic Memory Allocation and File Handling:

Dynamic Memory Allocation: Library functions for Dynamic memory allocation, Dynamic Multi-Dimensional arrays.
File Handling: - Introduction, Structure, File handling, Functions file types, Un-buffered and buffered file, Error handling.

Recommended Books:

1. Let Us C - Yashwant Kanetkar.
2. Programming in C - E. Balagurusamy

PGDCA SEMESTER-I

PAPER CODE-1.5

Practical & Viva-voce

The practical examination will be based on the applications of theory papers taught to them during current semester period and it will be evaluated through practical production and written work followed by viva – voce.

PGDCA SEMESTER-II

PAPER CODE-2.1

Visual- Basic

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 05 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -3 Marks each =5×5=25 Marks
2. 05 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 works) =5×5=50 Marks

COURSE OUTCOMES

- Students will understand and describe some of the major enhancements to the of Visual Basic.
- Students will describe the basic structure of a Visual Basic and use main features of the integrated development environment (IDE).
- Students will create applications using Microsoft Windows Forms
- Students will create applications .

UNIT – I:

Introduction to visual Basic: Hardware requirements, features of VB, Editions of Visual Basic, and Event Driven Programming vs. procedure oriented programming. Introduction to Integrated Development Environment. Basic concepts of Visual Basic programming: Controls, properties, methods, events, forms, projects. Creating Executable files.
Variables, constants, data types, data conversion function., scope of variables Operators

UNIT – II:

Control Structure : Conditional / branching statements : If...else..endif, Select case Looping statements: do..while, for.. next, for each, exiting a loop, goto statement, msgbox and input box functions.
Arrays: types of arrays, array manipulation, Working with standard controls. Working with control array, various key and mouse events, using drag and drop concepts

UNIT – III:

Procedure and Functions: types of function, library function, date and time function, format function, and string related function, validation function. Creating user defined function & procedure, call by value and call by reference, concept of recursion, working with basic module, class module and form module.

UNIT – IV:

Working with Advanced Controls: toolbar, status bar, tabbed dialog controls, progress bar, animation controls, dtpicker, calendar, common dialog control.
SDI & MDI Application: creating MDI application, menu editor: defining menu & popup menu, sub main, startup objects. Working with graphics control and using grphic methods.

UNIT- V:

Data Access Using the ADO Data Control: Basic concepts of relational database, visual data manager, introduction to SQL, concept of ODBC, Overview of DAO and RDO, Using DAO and RDO to access data. ADO features, difference among ADO, DAO and RDO, accessing and manipulating database using ADO, ADO object hierarchy, concept of recordset and its type, connection object, command object.

BOOKS RECOMMENDED :

1. Introduction to OOP & V.B. – V.K. Jain (Vikas Publisher]

2. Data Base Management System - Alexies & Mathews [Vikas publication]
1. Programming in Visual Basic - G.B. Sahoo & Rita Sahoo BPB Publications.
2. Programming in VB 6.0- Bradley – TM

PGDCA SEMESTER-II

PAPER CODE-2.2

Database Management Systems

Maximum Marks-75
Minimum Marks -30

Note - Scheme of Examination

1. 05 Short Answered questions (Covering 5 Units)
   (Not more than 50 words) -3 Marks each =5×5=25 Marks
2. 05 long Answered questions of 10 Marks each
   With internal choice of one question from each unit
   (Not more than 500 works)=5×5=50 Marks

COURSE OUTCOMES

- Students will be able to understand Database design.
- will be able to gain knowledge of subject provided to them.
- Students will be able to write Standard Query Language .
- Students understand Normalization

Syllabus

UNIT — I: Introduction To DBMS

Purpose of database systems, view s of data, Data Modeling — Relational Model, Network Model, Hierarchical Model, Database Languages — Data definition Language, Data Manipulation Language, Data Control Language Transaction Management, Storage Management, Database Administrator and User, Database System Structure.

UNIT — II: E-R Model

Entity - Relationship model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys; Case studies of ER modeling Generalization; specialization and aggregation. Converting an ER model into relational Schema

UNIT — III: Database Design

Relational algebra Basic operations like select, Project, Union ,set difference, Cartesian product, rename and additional operations like Set intersection, Natural Join, Division ,Join(Left, right and Full)
Normalization concept in logical model; Pitfalls in database desi Anomalies — Insert, Update, Delete, Redundancy, Functional dependencies, Decomposition, Normal forms (I NF, 2NF, 3NF).

UNIT — IV: SQL — DDL and DML Commands

Introduction to my SQL language, Structure of my SQL statements & my SQL writing guidelines, Data Definition commands: Creating a Database, Show, Creating a Table ,Use, Altering the Database, Altering the "fable, RENAME, DESCRIBE, Dropping the Database, Dropping the Table. S"ELECT statement that are described in (FROM WHERE, GROUP BY, HAVING, ORDER BE, INSERT, UPDATE, DELETE, REPLACE.

UNIT — V: Database Functions and Security

Aggregate Function (AVG, COUNT, MAX, ISBN, SUM). Defining primary keys, foreign keys, Unique Keys, CHECK constraints in a table, removing constraints from table. SQL Sub Queries. Views: What is Views, Create, Drop and Retrieving data from views. **Security:** - Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges.

Recommanded Books:

1. Data Base Systems : Silberschatz & Korth.
2. An Introduction to Data base System: C.J. Date
3. Data Base Management System : Raghu Ramakrishnan