PGDCA scheme

I Sem

		EXT	INT	PRAC	TOTAL
PGDCA101	Computer Fundamentals	100	50		150
PGDCA102	Application Software Packages	100	50		150
PGDCA103	Programming in 'C'	100	50		150
PGDCA104	Computer organization & architecture	100	50		150
PGDCA105	System Analysis & Design	100	50		150
PGDCA106	Programming lab on102,103,104			50	50
		500	250	50	800

II Sem

		EXT	INT	PRAC	TOTAL
PGDCA201	Visual Basic	100	50		150
PGDCA202	Object Oriented Programming	100	50		150
PGDCA203	DBMS	100	50		150
PGDCA204	Introduction to Internet Technologies.	100	50		150
PGDCA205	Introduction to Linux	100	50		150
PGDCA206	Minor Project based on 201 & 203			100	100
PGDCA207	Programming Lab on 202 & 205			50	100
		500	250	150	900

Note -: In PGDCA 205 a group of max. 2 students will be allowed to carry out the project jointly.

PGDCA 101 :   Computer Fundamentals

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT 1 - Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers-Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super,
Basic components of a computer system - Control unit, ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.
Data representation and codes, Decimal, Binary ,Octal and Hexadecimal System and inter conversion ,BCD numbers and ASCII codes.

UNIT 2-Computer hardware, Input devices- Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen,
Output devices- Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA,
XGA etc, Printers - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers , ,
Memory devices, RAM, ROM, Winchester drive, Mass storage devices, CD-ROM, Flash memory and their characteristics and uses.

UNIT 3-System software - Assemblers, Translators, Interpreters, Compilers, Operating Systems - Functions, Types- Batch, Single, Multiprogramming , Languages : High level languages, Procedural and Object Oriented languages. Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software.

UNIT 4-Computer applications , Office automation, Industrial applications, CAD/CAM, Library information system , Digital image processing, Multimedia applications, Space research,

UNIT 5-Computer networking: Goals and applications, LAN, MAN ,WAN
 Computer communication.: Communication modes : simplex, half duplex, full duplex.
Types of Network - LAN, WAN, MAN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, Bridges, HUB, Routers, Repeater and Gateways, communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and
characteristics, Types of Connections - Dialup, Leased Lines, ISDN, Use of Communication in daily life.

Reference:

1.Introduction to Computers   C. Xavier 2nd Edition,
                                                         New Age International
2.Fundamentals of Computers   V. Rajaraman 2nd Edition
                                                         Prentice Hall of India
3.IT Today   S Jaiswal Galgotia Publication
*4. **Computers Today***   *S.K.Basandra, Galgotia Publications.*
*5. **Fundamentals of Information technology*** *Alexis Leon & Mathews Leon,*
                                                 Vikas Publishing House, New Delhi.

PGDCA102 : Application Software Packages

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT – 1

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer;
Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel; Start button
& Program lists; Installing new Hardware & Software.

UNIT – II

Basics Of word:
Creating word documents; The word window , Entering Text . Editing Document text; Selecting Text, Copying and Moving Text. Applying Text Enhancements; Applying Fonts and Font Styles in Word, Highlighting Text For Distinctive Look . Aligning and Formating ; Aligning Text, Using Identation Options, Setting Line Spacing Options, Using Tabs. Creating Lists, Numbers and Symbols ; Numbering and Bullets, Creating Special Characters. Replacing and checking Text ; Creating and Applying Frequently Used Text, Finding and Replacing Text , More about Spelling and Grammar, Using the Thesaurus Command. Getting Into Print ; Using Print Preview, Changing Page Orientation and Paper Size, Aligning Text Vertically, Settting Margins, Printing Options.

Advanced Formatting Techniques in Word :
Formatting Pages; Formatting Sections, Creating and Modifying Page Numbers, Creating Headers and Footers , Taking Care of Loose Ends .Working With Columns ; Working With Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables ; Creating and Revising Tables , Modifying Table Structure , Formatting Tables , Using Tables Calculatingly. Working Smarter with Word ; Using Templates. Creating Outlines in Word ; Creating an Outline , Modifying an Outline

UNIT- III

Access Concepts & terms : database tables ,relational databases , records , fields , controls & objects , queries & dynasets, forms, reports ,properties , wizards , macros , Access requirements , starting & quitting access , the access workspace & tool, views . Creating database & tables with & without wizard , field name , data types & properties , adding & deleting fields in fields , renaming fields & their caption , resizing fields , freezing columns , primary key field & indexing fields.
Form: Form wizard , saving & modifying forms : Entering & Editing data , Finding , sorting & displaying data , queries & dynasets , creating & using select queries , using wild cards in queries , reformatting dynasets.
Reports : Creating reports, previewing reports, printing reports, modifying, saving.
Relational databases – definition, purpose, creation, viewing, deleting. Expressions , Macros.

UNIT - IV

Creating Excel Worksheets :

Entering and Editing Cell Entries ; The excel Application Window , Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers , Revising Text and Numbers. Working with Numbers ; Creating Formulas, Formatting   numbers. Changing Worksheet Layout ; Adjusting Column Width and Row Height, Inserting and Deleting Rows and Columns, Inserting and Deleting Cells , Moving and Copying Cell Contents , Naming a Worksheets , Selecting Worksheets , Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options ; Aligning Text , Border and Color. Printing in Excel ; Print Preview, Changing Page Setup , Checking   Worksheet Spelling.

Advanced Techniques in Excel :

Using Functions and References ; Using Functions , Entering Functions, Relative and Absolute Cell References. Naming Ranges ; Naming Ranges , Using Names . Creating Easy-to-Understand Charts ; Pie Charts , Series Charts , Creating Charts , Moving , Sizing , and Printing Chart Objects . Editing and Formatting Charts ; Adding a Data Series , Deleting a Data Series , Modifying and Formatting Charts.

UNIT – V

Creating PowerPoint Presentations:

Creating a Basic Presentation , Building Presentations, Modifying Visual Elements , Formatting and Checking Text , Adding Objects, Applying Transitions , Animation Effects and Linking , Preparing handouts , Taking   the Show on the Road.

Reference :

1. Microsoft Office 97   : Will Train , Gini Courter, Annette Marquis
                                  bpb Publication.

PGDCA 103 : Programming in 'C'

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT 1-Programming Fundamentals : Program Concept, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart, Advantage & Disadvantage, , techniques of problem solving : Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits & Demerits, Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming. Testing & Debugging & their Tools .

UNIT 2-Programming in C including features of 'C', Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input output i.e. printf() and scanf().

Branching Constructs: if-else,switch, conditional operator & goto statements

If statement, If.....Else statement, Nesting of If....Else Statement, else if ladder, The ?: operator, goto statement, Switch statement, Compound statement, Loop controls, for, while, do-while loops, break, continue, goto statement.

UNIT 3- Functions: categories of functions User defined and library function , recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class specified - auto, extern, static, register.

 Arrays : what is array, declaring initializing , 2D and 3D array. String: declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

 UNIT 4-Pointers: operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure ;The preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and#ifdef & undef Structures : the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. Unions : initialization and use of it in a program.

UNIT 5-File Management: Introduction – File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer,Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C,Flushing astream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments

Reference:

1.Let us C   Yashwant Kanitkar, BPB Publicatiuon
2.Programming in ANSI C   Balgurusuamy Tata McGraw Hill
3.C Programming   Schaum's series
4. The sprit of C   Mulish Cooper, Jaico Publishing
5. Programming with ANSI & Turbo C   Kamthane, Pearson Education.
6.   An introduction to C programming – Amit Saxena, Anamaya Publishers, New Delhi

PGDCA 104 : Computer Organization and Architecture

UNIT 1-Component of computer system, number system, binary, octal, hexadecimal conversion, 1's compliment and 2's compliment, binary arithmetic - addition, subtraction character codes (ASCII, EBCDIC). Error detection and correction codes,

UNIT 2-Boolean Algebra - Representation of values and complement, AND, OR, NOT operators, d'morgan's theorem, simplifying expressions, truth table, logic gate : AND, OR, NOT, NAND, NOR, XOR, XNOR and karnaugh map method, combination logic design.

UNIT 3-Flip flops-clocked RS, D, JK flip flops. Counters - Ripple, Synchronous, Ring Counters. Registers - Buffer, Controlled Buffer Register. Addressing Techniques - Direct, Immediate, Indirect Addressing.

UNIT 4-Control Unit - Its purpose, instruction word, instruction cycle.I/O devices - Printers: Dot matrix, Electro magnetic, Thermal, Laser, CRT's, Keyboards.

UNIT 5-Memory- Main, Ram, Static & Dynamic, ROM, EPROM, cache memory, Auxiliary storage : floppy disk, introduction to microprocessor, interfacing buses, bus formats address, data and control.

Reference:

1) DDigital computer fundamental-Thomas C Bartee
2) Computer system architecture-M.M Mano
3) Computer fundamentals (architecture & organization) B.Ram.

PGDCA 105 : Information System Analysis and Design

UNIT 1-Overview of Systems Analysis and Design : Systems Development Life Cycle. Concept and Models : requirements determination. logical design, Physical design, test planning implementation planning & performance evaluation; communication, interviewing, presentation skills; group dynamics; risk and feasibility analysis; group-based approaches.

UNIT 2-JAD, structures walkthroughs, and design and code reviews; prototyping; database design; software quality metrics; application categories software package evaluation and acquisition.

UNIT 3-Information requirement Analysis: Process modeling with physical and logical data flow diagrams, data modeling with logical entity relationship diagrams; Developing a Proposal: Feasibility study and cost estimation.

UNIT 4-Systems Design: Design of input and control, design of output and control, file design/database design, Process design, user interface design; prototyping; software constructions; documentation.

UNIT 5-Application Development Methodologies and CASE tools: Information engineering, structured systems analysis and design and object oriented methodologies for application development data modelling, process modeling, user interface design and prototyping; use of computer aided software engineering (CASE) tools in the analysis, design and implementation of information systems.

Reference: -

1. Haryszkiewycz, I.T., "Introduction of Systems Analysis and Design". Prentice Hall of India. 1989.
 2. Rajaraman,V., " Analysis and Design of Information Systems". Prentice Hall of India. 1991.
3. Senn J.A., " Analysis and Design of Information systems". Tata McGraw Hill Book Company, 1986.
4. Whiten, J.K., Bentley, L.D., Beslow, V.M., " Systems Analysis and Design Methods". Galgotia Publications Pvt. Ltd. 1994.

PGDCA 201 : Visual Basic

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.

Programming Essentials- General Procedures, Sub Procedures and function-designning,. Calling & passing controls as arguments , Constant & variable : Decleration, Scope and types.

UNIT 2-Designing a project :- start up form , Properties and Program design , Managing multiple forms.

Flow of control - decesions - if statement , Else if clause ,Select case structure, Nested decisions.

Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarings arrays ,Multidimentional & dynamic arrays , User defined types :- Recorded structures, With statement arrary of records .

Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.

Text files - opening & closing file, Write# , Print# , Input # , Line input # statements.

UNIT 4-Input & Out put Procedures - Defining a Menu , Control Arrays , Input Techniches - Validating & Formatting the Input , Moving the focus , Menu choices out put techniques -Calculation & Display , Drawing chart .

UNIT 5-Visual basic controls:- Intrinmic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

Reference:

1. Foundation of Visual Basic - Douglus Hergert.
2. Visual Basic Programming Explorer- Peter G. Aitken.

PGDCA 202 : Object Oriented Programming

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT-I
Overview of C++ : Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

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, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.
Constructor & Destructor : Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Constructing two dimensional Array, Destructor.

UNIT-III
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 << .

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
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 format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS :
 *C++ **The complete reference*** *- Herbert Schildt,- TMH Publication*
 Object Oriented Programming *C++ - R. Lafore*
 Object Oriented Programming with *C++ - R. Subburaj**,** Vikas Publishing House, New Delhi.*
 C++*- E. Balguruswamy, , TMH Publication*

PGDCA 203 :   DBMS

UNIT 1-Introduction: database system, advantages of database systems-redundancy, consistency, sharing, standards, integrity, security, conflicting requirements and data independence, concept of distributed database, DBMS, component. Architecture of database systems: schema, sub-schema; logical and conceptual view. data description language (DDL), DML and database administrator.

UNIT 2-Data models: relational model-structure, tuple, attributes, relation normalization, key-primary key, candidate key, alternate key. relational calculus & relational algebra-concepts, definition of union, set difference, Cartesian product -selection, intersection, quotient and join. Normal forms : -first, second, third normal forms.

UNIT 3-Hierarchical and network model-concept, structure, advantages and disadvantages. protection and security : - types of crashes, security on databases.

UNIT 4-.
Relational Algebra & SQL: The structure, relational algebra with extended operations, modifications of Database, idea of relational calculus, basic structure of SQL, set operations, aggregate functions, null values, nested sub queries, derived relations, views, modification of Database, join relations, DDL in SQL.

UNIT 5
Database Integrity: general idea. Integrity rules, domain rules, attribute rules, relation rules, Database rules, assertions, triggers, integrity and SQL

Reference:

1) Introduction to database systems- C. J date.
2) Principles of database system Jeffery D Ullman.
3) A Silberschatz, H.F Korth, Sudersan "Database System Concepts" –, MGH
   Publication.

PGDCA 204 Introduction to Internet Technologies

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT- 1 Introduction of Internet : What is Internet , Services Of Internet , H/W & S/W Requirements to Connect to the Internet .E-mail, Introduction of WWW, Web Server and Web Client , Difference between the web and the Internet , Internet Service Provider (ISP).

Web publishing Concepts, Domain name Registration, Space on Host Server for Web site,

UNIT- 2 Choosing an Internet Service Provider : Location , Stability , Customer Service, Performance , Pricing , Establishing an Internet Account.

E-mail Basics : Running an E-mail Program , Sending mail, Reading mail, Replying to mail, Deleting mail. Newsgroups, mailing Lists , Chatting.

UNIT –3

Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Massage Board, Internet chatting -
Voice chat, text chat.

UNIT –4 An Introduction to Internet Explorer : Starting Internet Explorer , A Quick Tour with Internet Explorer , At the Helm in internet Explorer, Viewing Various file Types .

Internet Search Engines: What is Search Engines , How do Search Engines work ?, Types of Search Engines.

UNIT -5 Creating a Web Page : What is HTML , What can You Do with HTML , Creating , Saving and Viewing HTML documents , Applying Structure Tags , Applying Common Tags and attributes Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags. Use of Frames and Forms in web pages.

Creating a New Web, Opening an Existing Web, Creating , Opening and Saving Web Pages , Entering and Editing Text. Printing Page , Spell Checking, Finding or Replacing Text.

Reference:
Alexis leon and Mathews Leon   - Internet for every one (Tech World)
Douglas Comer - The Internet Book (prentice Hall)
SYBEX- bpb publication – Internet Complete (Second Edition).
 *V.K.Jain - **O level Module - M 1.2 - Internet & web page designing** , BPB Publications*

PGDCA 205 - Introduction to Linux

Time 3.00Hours   Max. Marks : 100   Min. Passing Marks : 40

UNIT – I
Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT–II
Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

UNIT–III
System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu,
installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical
interfaces, changing X settings.

UNIT–IV
Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V
Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS & REFERENCES BOOKS :
 UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
 Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).
 Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.
LINUX Complete – BPB Publication

PGDCA 206 :   Minor Project

The project is to be done by the student reflecting the knowledge gained during the course of work . Presentation of the project will be in the accepted norms and should be of real life value .

Project report will be submitted by the students latest on the date announced by the department and then evaluated by the examiner.