POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (Regular)

SCHEME OF EXAMINATIONS
With effect from : 2012-2013

Paper Code	Title of Paper	Period per Week	External marks	Internal Assessment	Exam. Duration Hours
PGDCA-101	Essentials of Computers & 'C' Programming	04	80	20	3
PGDCA-102	Operating System and PC Software	04	80	20	3
PGDCA-103	System Analysis & Design	04	80	20	3
PGDCA-104	VISUAL BASIC & DBMS	04	80	20	3
PGDCA-105	Computer Networks & Distributed System	04	80	20	3
PGDCA-106	Practical-Software Lab (Based on Paper 101 & 102)	04	80	20	3
PGDCA-107	Practical-Software Lab (Based on Paper 104)	04	80	20	3
PGDCA-108	Project Work & Viva-Voce	-	80	20	3 months training

Paper Title: ESSENTIALS OF COMPUTERS & 'C' PROGRAMMING
Paper Code: PGDCA-101

Theory Marks: 80
Internal Assessment: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit

UNIT-I

Computer Fundamentals: Generations of Computers, Definition, Block Diagram along with its components, characteristics & classification of computers, Limitations of Computers, Human-Being VS Computer, Applications of computers in various fields.

Number Systems: What is Number system, necessity of binary number system, binary, octal and hexadecimal number system, inter-conversion of numbers, binary arithmetic, character codes.

UNIT-II

Computer hardware & software: I/O devices, definition of software, relationship between hardware and software, types of software.

Overview of operating system: Definition, functions of operating system, concept of multiprogramming, multitasking, multithreading, multiprocessing, time-sharing, real time, single-user & multi-user operating system.

UNIT-III

C Language: History of C language, Structure of a C program: Data types(int, float, char, double, void), Data structure, Constants and variables, variable declaration (integer, float, character, logical variable, string variable), Constraints, operators and Expression; Arithmetic operators, Relational Operators, logical operators, Expressions, Control construct, if then, nested if, switch, for, do - while, while – do.

UNIT-IV

Arrays: Array declaration one and two dimensional arrays; Functions- Fundamentals: General form, function arguments, Return value, basic I/O: Formatted Input/Output, Unformatted Input/Output, Program Design examples, advance features; Typed modifiers and storage class specifier for data type , Bit Operators? Operator, & operators, * operators. Type casting. Type casting conversion

A brief introduction to C++ object oriented programming techniques, Difference between C and C++

REFERENCE BOOKS
1. Balagurusamy E, Computing Fundamentals and C Programming, Tata McGraw Hill.
2. Rajaraman, V., Fundamentals of Computers, PHI
3. Ram, B., Computer Fundamentals, Architecture & Organization, New Age International (P) Ltd.
4. N.S. Gill, "Essential of Computer and Network Technology," Khanna Book Pub. Co. New Delhi.
5. P.K. Jain, Computer Fundamentals, BPB Publication.
6. Y Kanetkar, Working with C, BPB publications.
7. E, Balagoswami, Programming in ANSI C, BPB publications.
8. Rajender Singh: Application of IT to Business, Ramesh Publishers.

Paper Title: OPERATING SYSTEM AND PC SOFTWARE
Paper Code: PGDCA-102

Theory Marks: 80
Internal Assessment: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit

UNIT – I

Fundamentals of Operating system: Introduction to Operating System, its need and operating System services, Early systems, Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems.

UNIT-2

Disk Operating System: The Fundamentals of DOS, DOS & Disks organization, Understanding DOS prompt and shell screen using keyboard & mouse, Internal & External commands; Batch files; using the screen editor, printing image, ASCII & multiple files, Indirect printing and spooling; communicating with other devices, parallel vs serial communication; Optimizing DOS, Config. Sys & AUTOEXEC.BAT files freeing up memory at boot time, managing Extended/Expanded memory, RAM disk.
UNIX: Introductory concepts of UNIX and elementary commands.

UNIT-3

Windows: Windows fundamentals; types of windows, anatomy of a window; program manager, creating & using groups, file manager, customizing windows, Installing a printer, using clipboard, using paintbrush.

UNIT-4

MS- Word: Fundamentals of MS-Word: Menus, Toolbars, Rular, Scroll Bars, Status Bar; Creating, Saving, Importing, Exporting and Inserting files; Formating Indents/Outdents, List, Tabs, Styles, Working with Frames, Columns pictures, Charts/graphs, forms Tolls, Equations and Macros.
EXCEL: Worksheet overview: Rows, Columns, Cells, Menus, Creating Worksheet, opening and saving worksheet; Formatting, Printing Charts, Windows, Establishing Worksheet link, macros, Database Tables; using files with other program**.**

Suggested Books:

1. Robbins Judd: mastering DOS 6.0 & 6.22 BPB Publications.
2. Mansfield: Mastering Word 6.0 for Windows, BPB publications.
3. Kelly Bootle: Understanding UNIX Sybex/Tech Asian Edition Tech Publication.
4. R.K. Taxali, PC Software made simple, Tata Macgraw Hill Publications Co. Ltd. 1996.
5. P.C. Guide for Windows, ITC Publications, Galgotia Publications, 1995.
6. Robert M. Thomas, DOS 6 & 6.22 Instant Reference, BPB Publications.
7. Any other Books (s) Covering the contents of the paper.

Paper Title: System Analysis & Design
Paper Code: PGDCA-103

Theory Marks: 80
Internal Assessment: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit

UNIT-I

Overview of System Analysis and Design: Introduction to system, Definition and characteristics of a system, Difference between Manual System and Automated System, Elements of system, Types of system, System development life cycle, Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility.

UNIT-II

Structured Analysis: Tools of structured analysis, DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action.

UNIT-III

System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough, Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design, Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control.

UNIT-IV

System Testing and Implementation: Introduction to testing, Objectives of testing, System Testing, Need for System Testing, Testing Strategies, Types of system tests, System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Forms of documentation.

REFERENCE BOOKS:

1. Systems Analysis and design BY e.m. aWAD Galgotia   Pub.(P) Ltd.
2. Data Management and Data Structures by Loomis (PHI)
1. System Analysis and Design by Elias Awad.
2. Introductory System analysis and Design by Lee Vol. I & II

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Paper Title: VISUAL BASIC & DBMS
Paper Code: PGDCA-104

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Theory Marks: 80
Internal Assessment: 20

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Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit

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UNIT-I

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Basics of Visual Basic: Variable Names, Data Types, Assignment, If-then, If-then-else, if then-else-if-else, expression, print statement, arrays, variable declaration, built-in & User defined types, Subroutine and functions, Boolean Operators, Arithmetic Operator, For- .next, do loop, while-wend, procedure/Public, Private and Static & Dim Statement.

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UNIT-II

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Structure of VB program: Forms & built in controls, Properties and events, Additional Controls- Option buttons, Frames, Check boxes, Scroll bars, Timer control, Procedure and Functions, using Debugging windows, Database programming, Crystal report, simple Active X controls.

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UNIT-III

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Basic Concepts – Data, Information, Records and files. Traditional file –based Systems-File Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of Database Approach, advantages and disadvantages of database system, components of database system, Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, DBMS users, Advantages and Disadvantages of DBMS, DBMS languages.

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UNIT - IV

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Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances, Data Independence – Logical and Physical Data Independence.
Data Models – ER Model, Relational Model, Other Models.
Database Languages - DDL, DML and Basic commands of SQL.

REFERENCE BOOKS:
1. Michael Halvorson, "Step by Step Microsoft Visual Basic 6.0 Professional", PHI
2. "Visual basic 6 Complete", BPB Publications.
3. Scott Warner, "Teach Yourself Visual basic 6", Tata McGraw-Hill Edition
4. Brian Siler and Jeff Spotts, "Using Visual Basic 6", Special Edition, PHI.
3. Elmasri & Navathe, "Fundamentals of Database Systems", 5th edition, Pearson   Education.
4. Thomas Connolly Carolyn Begg, "Database Systems", 3/e, Pearson Education
5. C. J. Date, "An Introduction to Database Systems", 8th edition, Addison Wesley N. Delhi

Paper Title: COMPUTER NETWORKING AND DISTRIBUTED SYSTEM
Paper Code: PGDCA-105

Theory Marks: 80
Internal Assessment: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit

UNIT-1

Computer Communication:

Need for data transaction over distances; Data transmission modes-simplex, half duplex, full duplex. Data transmission speed narrow band, voice band and broad band; Communication channels-twisted satellite; frequency modulation and phase modulation; Modern; Modern communication Processors; asynchronous and synchronous transmission; Switching techniques-circuit switching, massage switching and packed switching.

UNIT-2

Networking topologies:
Star, ring, completely connected, hybrid and multipoint; Network of Computers; Need and advantages of networking LANs; Types of LANs; MAN and WAN; Communication protocols; The ISO-OST model (functionalities).

UNIT-3

The Internet:
Why use Internet; Internet connection options; How India is connected to Internet; Security; WWW (World Wide Web), gopher, electronic mail, JAVA Architecture (JAVA virtual Mchine & JAVA API), Language specification (Constants, variables, Data types, Operators & Expression, Decision making & branching, Looping, Array, String vectors); Interface, Package Java.lang, Multithreaded programming; Managing errors & Exceptions; Applet programming; Introductory concept of TCP/IP, UDP.

Unit-IV
HTML: Internet Language, Understanding HTML, Create a Web Page, Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, E-mail Links and link within a Page, Creating HTML Forms.

Readings:

1. HTML in 24 Hours, BPB Publications.
2. Tech Yourself LAN, BPB Publications.
3. JAVA 2 By E. Balagurusanumy, Tata Mc Hill.
4. Essentials of Computer & Network Technology by Dr. N.S. Gill, Khanna Publications.

Paper Title: Practical-Software Lab (Based on Paper PGDCA-101 & 102)
Paper Code: PGDCA-106

External Marks: 80
Internal Assessment: 20

Paper Title: Practical-Software Lab (Based on Paper PGDCA-104)
Paper Code: PGDCA-107

External Marks: 80
Internal Assessment: 20

Paper Title: Project Work and viva-voce
Paper Code: PGDCA-108

External Marks: 80
Internal Assessment: 20

Project Report   : 50 Marks

Project Demo and viva   : 30 Marks

Students will have to develop a Software Project by using any suitable programming language/software for 3 months in the Deptt/Organisation.