

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS FOR THE BATCH FROM YEAR 2024 TO YEAR 2025

FOR

PG DIPLOMA IN COMPUTER APPLICATIONS (Credit Based Grading System)

SEMESTER: I – II

EXAMINATIONS: 2024-2025



GURU NANAK DEV UNIVERSITY
AMRITSAR

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**PG Diploma in Computer Applications (CBGS)
Syllabus for the batch from year 2024 to 2025**

SCHEME

SEMESTER-I

Subject Code	Paper Name	Theory	Practical	Credits		
				L	T	P
PCA01001T	PC Computing-I (MS Office) 2003 (Theory)	50				
PCA01002L	PC Computing-I (MS Office) 2003 (Practical)		50	2	0	2
PCA01003T	PC Computing-II (Professional DTP) (Theory)	50				
PCA01004L	PC Computing-II (Professional DTP) (Practical)		50	2	0	2
PCA01005T	Fundamentals of Computer & Operating Systems (Theory)	50				
PCA01006L	Fundamentals of Computer & Operating Systems (Practical)		50	2	0	2
PCA01007T	Database Management System through Oracle-10g & System Analysis & Design (Theory)	50				
PCA01007T	Database Management System through Oracle-10g & System Analysis & Design(Practical)		50	2	0	2
	Total:	200	200	8	0	8
	Grand Total:		400		16	

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SEMESTER-II

				CREDITS		
Subject Code	Paper Name	Theory	Practical	L	T	P
PCA02001T	Network Concepts and Management (Hardware, Software, setting in LINUX/UNIX/NT environment)(Theory)	50		2	0	2
PCA02002L	Network Concepts and Management (Hardware, Software, setting in LINUX/UNIX/NT environment)(Practical)		50			
PCA02003T	Programming in C(Theory)	50		2	0	2
PCA02004L	Programming in C(Practical)		50			
PCA02005T	Introduction to Scripting Languages, Web Designing & Uses of Internet(Theory)	50		2	0	2
PCA02006L	Introduction to Scripting Languages, Web Designing & Uses of Internet(Practical)		50			
	List of Optional Papers					
PCA02007T	Option (i): Programming in Visual Basic with Active X(Theory)	50		2	0	2
PCA02008L	Option (i): Programming in Visual Basic with Active X(Practical)		50			
PCA02009T	Option (ii): e-Commerce / Business (Theory)	50		2	0	2
PCA02010L	Option (ii): e-Commerce / Business(Practical)		50			
PCA02011T	Option (iii): Multimedia System(Theory)	50		2	0	2
PCA02012L	Option (iii): Multimedia System(Practical)		50			
PCA02013T	Option (iv): Installation and Maintenance of ComputerSystem(Theory)	50		2	0	2
PCA02014L	Option (iv): Installation and Maintenance of Computer System(Practical)		50			
	Total:	200	200	8	0	8
	Grand Total:		400			16

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**SEMESTER- I
PCA01001T: PC COMPUTING-I (MS Office) 2003**

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type calculator.

SECTION–A

MS-Word: Introduction to Ms-Office, Ms-Access, Ms Excel. Parts of window of word (Title bar, menu bar, status bar, ruler) , Creation of new documents, opening document ,insert a document into another document. Page setup, margins, gutters, font properties, A!ignment, page breaks, header footer deleting ,moving, replace, editing text in document. Saving a document, spell checker, printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height width of row or column. Editing, deleting Rows, columns in table. Borders, shading, Templates, wizards, Drawing objects, mail merge

SECTION–B

MS-Power Point: Introduction to Ms power point. Power point elements (templates wizard Views, color schemes ,Exploring power point menu (opening & closing menus, working With dialogues boxes), adding text, adding title, moving text area, resizing text Boxes, adding pictures. Starting a new slide, saving presentation, printing slides .Views (slide View slide sorter, notes view, outline view) .Formatting & enhancing text formatting, Choosing transitions. Creating a graph, displaying slide show, adding multimedia .Slide transitions. Timing slide display, adding movies & sounds. Using a pick look Wizards to change format.

SECTION–C

MS-Excel: Introduction to Worksheet/Spreads, Features of excel. Describe the excel Window, different functions on different data in excel, creation of graphs, editing it and formatting, changing chart type to 2d chart or 3d chart, creation of worksheet, adding, deleting, moving the text in worksheet. linking different sheets, sorting the data, querying the data, filtering the data (auto and advance filters), What-if analysis, printing a worksheet.

SECTION–D

MS-Access: Introduction, Understanding Databases. Creating the tables. entering records in table, deleting table, modifying table fields, linking tables, Queries. Forms, formatting forms, relating a form to tables, Reports(building reports, formatting report. displaying the information of table using reports Adding Graphs to your reports. .

References:

1. PC Computing by R.K. Taxali.
2. PC Software by Rachpal Singh & Gurinder Singh.

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SEMESTER- I

PCA01002L: PC COMPUTING-I (MS Office) 2003

Based on Theory Paper

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**SEMESTER- I
PCA01003T: PC COMPUTING–II (Professional DTP)**

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

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SECTION–A

Photoshop 5.5

1. Introduction to Graphics, Vector Graphics & Bitmaps
2. Understanding Image Size & resolution
3. 3; Relation between resolution, File sizes & output
4. Using menu & Palettes.
5. Concept of Path (Segment, Anchor, Curved, Closed, Open, Subpath)

SECTION–B

Photoshop 5.5

1. Photoshop Tools (Pen, Pencil, Brush, History, Air, Eraser, Rubber stamp, Smudge, Dodge, Burn, Sponge), Masks & Histogram.
2. Acquiring &. Importing Images,
3. Concept of Layers Channels & Path, Filters, Rendering Effects, Transformation, Strokes, Image Modes, Canvas & Images.
4. Using navigator & Photo Shop plugins.

Corel Draw-9

1. Concepts of vector graphics.
2. Color palate, Pasteboard, &. Print Page

SECTION–C

Corel Draw-9

1. Using ruler unit's etc...
2. Corel Tools (Pick, Shape, Knife, Eraser, Zoom, Freehand, Natural Pen, Dimensions, Ellipse, Polygon etc.).

SECTION–D

Corel Draw-9

1. Transformations, Trimming, Welding, Intersection of Objects, Snapping, Using Object Manager.
2. Giving effects, (Envelope, Adding Perspective, Contours, Blending Image.)

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SEMESTER- I

PCA01004L: PC COMPUTING–II (Professional DTP)

Based on Theory Paper

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SEMESTER- I

PCA01005T: FUNDAMENTALS OF COMPUTER & OPERATING SYSTEMS

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION-A

Fundamentals of Computer:

Introduction to computer, Applications of computer, Components of computers, Input-output devices (key boards, mouse, track ball, light pen, cards, printers, plotters, scanners), Secondary storage devices (floppy disk, magnetic disk, Winchester disk, optical disk) Types of software, Translators (compiler, interpreter, assembler), Introduction to data communication and network.

Introduction to Windows Vista:

Parts of window screen (Desktop, window, icons), start menu, Taskbar settings, application & document window, anatomy of a window (Title bar, minimize, maximize button, control box, scroll bars, scroll buttons, scroll boxes), Window explorer (expansion, collapsing of directory tree, copying, moving, deleting files, folder, creating folders), About desktop icons (recycle bin, my computer, network neighborhood, briefcase), folder, shortcut creation, setting of screen saver, color settings, wallpaper, changing window appearance.

SECTION-B

Disk Operating System:

Meaning of operating system, its functions, batch systems, real systems, multi programming, multitasking, single, multi user systems. Define dos, Structure of Ms-Dos (description of booting files, steps to boot the system), hot & cold booting internal command (cls, dir, date, time, vol, ver, copy con, type, ren, del, md, rd, d, path, prompt), external commands edit, attrib, backup, restore, chkdsk, diskcopy, dskcomp, deltree, edit, format.

SECTION-C

Introduction to Unix:

Explain the features of Unix system. Structure of Unix (Kernel, shell), Unix file system (data blocks, list, superblock, bootblock), Types of files (ordinary files, directory, special files), types of users (0-2), Simple commands (cat, ls, ln, chmod, mail, who, who am I, cal pwd, date, ps, mkdir, cd, rmdir, rm, tput, clear).

SECTION-D

Introduction to Unix:

Piping, filters, batch processing, shell programming (Echo, read, case constructs). VI editor (opening it, inserting, modifying, deleting, saving files). Types of shells (bourne, c, r shell. Login & logout of unix session).

References:

1. PC Software: By Rachpal Singh & Gurinder Singh.
2. Computer Fundamental: By Peter Norton.

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SEMESTER- I

PCA01006L: FUNDAMENTALS OF COMPUTER & OPERATING SYSTEMS

Based on Theory Paper

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SEMESTER- I

**PCA01007T: DATABASE MANAGEMENT SYSTEM THROUGH
ORACLE-10g & SYSTEM ANALYSIS & DESIGN**

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION–A

Basic Concepts:

An overview of Database Management, (database, database system, why database, data independence). An architecture for a database system (levels of the architecture, mapping, DBA), Introduction to Relational database systems.

Relational Model:

Domain and relations, Relational data integrity

SECTION–B

System Analysis and Design:

System development life cycle, System development tools.

ORACLE 10g:

SQL. *PLUS

Introduction to Oracle 10g

SQL- DOL, DML, DCL

SECTION–C

ORACLE 10g:

SQL. *PLUS

Join methods & Sub query, Union, Intersection, Minus, Tree Walking, Built in Functions, Views, Security amongst users, Sequences, Indexing, Object Oriented Features of Oracle 10g

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SEMESTER- I

SECTION-D

PL/SQL

Introduction to PL/SQL
Cursors- Implicit & Explicit
Procedures, Functions & Packages
Database Triggers

References:

Database Systems Concepts by Silberschatz, Korth & Sudarshan,
International Editions, Computer Science series-1997.
An Introduction of Database System by C.J. Date (Addison-Wesley Publishing co.)
SQL/PL/SQL. The Programming Language of Oracle by Ivan Bayross
(BPB Publications)

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SEMESTER- I

**PCA01007T: DATABASE MANAGEMENT SYSTEM THROUGH
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Based on Theory Paper

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SEMESTER- II

**PCA02001T: NETWORK CONCEPTS AND MANAGEMENT
(HARDWARE, SOFTWARE, SETTING IN LINUX/UNIX/NT ENVIRONMENT)**

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION–A

Introduction:

Network H/W and Software requirement~ Network topologies, OSI reference model, TCP/IP model.

Design Issues: ISDN, ATM, Routers, hub, switches.

SECTION–B

Network security:

Data compression techniques, cryptography, IP addressing schemes.

NT administration:

Account policies, creating a user account, group membership, administration of share through server manager. Primary Domain controller, backup, domain controller.

SECTION–C

Unix:

Network Operating System: Architecture, Shell, Kernel & File System

SECTION–D

Introduction to Linux:

Comparative study of NT server, Unix and Linux.

References:

1. Tannanbrum: Computer Network, Prentice Hall, 1992, 3rd.
2. Robert Reinstein, et.al: Windows NT Trouble Shooting and Configuration, Techmedia.

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SEMESTER- II

**PCA02002L: NETWORK CONCEPTS AND MANAGEMENT
(HARDWARE, SOFTWARE, SETTING IN LINUX/UNIX/NT ENVIRONMENT)**

Based on Theory Paper

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SEMESTER- II

PCA02003T: PROGRAMMING IN C

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION–A

Fundamentals of C:

Introduction of C, Data Types, Operators, their precedence, expressions and their evaluation.

Input/Output Functions:

Formatted I/O, Character I/O & String I/O Functions.

Control Structures:

Taking decisions using if, if-else, switch constructs and Conditional Operator, Description of break and continue Statements. Performing loops using for, while, do-while Constructs.

Functions:

Library Functions vs User-Defined Functions, Declaring (Prototyping) and defining User-Defined functions, ways of passing parameters to functions, Recursive functions, Storage Classes.

SECTION–B

Arrays & String:

What are Arrays?, Declaring arrays, initializing arrays, processing of arrays, passing arrays arguments to functions. What are Strings? How strings are handled in C? String functions, arrays of string.

Pointers:

What is a pointer variable? Declaring pointers, accessing values via pointers, pointer arithmetic, pointer to strings, passing arguments using pointers.

SECTION–C

Structure and Unions.

Defining a structure type, declaring variables of structure type, initializing structures. Accessing Structure Elements, Use of assignment Statement for structures, array of structures, nested structures, Unions; Declaring a Union, Accessing elements of a type union.

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SEMESTER- II

SECTION-D

Managing Data Files:

Processing a file, Standard Input/Output, System Level I/O, File updating

References:

1. Yashwant Kanetkar: Let us C, BPB Publications, New Delhi.
2. R.S. Salaria: Application Programming in C, Khanna Book Publishing Co. (P) Ltd., Delhi.

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SEMESTER- II

PCA02004L: PROGRAMMING IN C

Based on Theory Paper

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SEMESTER- II

**PCA02005T: INTRODUCTION TO SCRIPTING LANGUAGES
WEB DESIGNING AND USES OF INTERNET**

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION–A

HTML

Structure of HTML, Tags, Character Entities, Hyperlinks, Frames, Tables, Lists, Forms, Limitations of HTML.

SECTION–B

Front Page 2000

Features, Creating a Web Site using Wizard, One / Two / Three Column Body, Front Page Window, Various Toolbars of Front Page, Adding Clip Art, Thumbnails, resampling an Image, Beveling & Cropping an Image, Creating Bookmarks, Adding an E-mail Hyperlink, Tables, Marquee, Counter, banner, Hover Buttons, Creating a Web Page Using a Template, Themes, Forms.

SECTION–C

Internet & its Use

Types of Internet Connectivity, World Wide Web, E-mail, Telnet, Filer Transfer Protocol, IRC, Virtual Reality, Web Publishing, Web Hosting.

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SEMESTER- II

SECTION-D

Internet & its Use

Cyber Crime, Types of Cyber Crimes, Cookies, Virus, Trojan Horse, Worm, Danger of Virus.

References:

1. Internet Applications and Web Designing by A.P. Publishers.
2. HTML, DHTML, Java Script, Perl, CGI by BPB Publications.
3. Learning to Use Internet by BPB Publications.

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SEMESTER- II

**PCA02006L: INTRODUCTION TO SCRIPTING LANGUAGES
WEB DESIGNING AND USES OF INTERNET**

Based on Theory Paper

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SEMESTER- II

PCA02007T: (Option-i): PROGRAMMING IN VISUAL BASIC with ACTIVE-X

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION-A

Introduction to VB Environment

VB Applications

Controls Menus, Tool Bar and Dialogue Boxes

Testing and Debugging

SECTION-B

Working with Files

Data Access Objects (DAO)

Remote Data Objects (RDO)

Active X Data Objects (ADO)

SECTION-C

Data Reports

OLE -Control & Automation Server

SECTION-D

Active X -CONTROLS, EXE, DLL, Document, Wizards

Minor Project

SEMESTER- II

PCA02008L: (Option-i): PROGRAMMING IN VISUAL BASIC with ACTIVE-X

Based on Theory Paper

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SEMESTER- II

PCA02009T: (Option-ii): e-COMMERCE / BUSINESS

Time: 3 Hrs.

Max. Marks: 100

Theory: 50

Practical: 50

Credits: 2-0-2

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type calculator.

SECTION–A

E-Commerce:

Its definition, aims, processes, tools and results, EDI, VANs and Internet as Promoters. Types of E-Commerce, Commerce-net

Steps to Start E-Commerce.

H/W & S/W Requirements, Steps involved in opening your own online business.

EDI

EDI vs Traditional Systems, EDI enabled procurement process, components of EDI system, EDI implementation issues.

SECTION–B

Concerns for E-Commerce Growth:

Basic challenges to E-Commerce. Technological, Legal and regulators heads, Internet bandwidth & Technological issues.

NII : Technical issues Standards & services GIL. Issues that confront us in relation to securing electronic transactions. Implementation of digital signatures. Authentication Mechanisms. Electronic cash, its elements, legal issues, risks, paper document versus Electronic document

Laws for E-Commerce legal issues for internet commerce

SECTION–C

Re-Engineering for Changer:

Business process re-engineering BPR, methodology, Planning Methods for change to EC/EDI.

Case Studies: To demonstrate usefulness of E-Commerce in various business areas

Banks, Reservations, E-Governance, Supply-chain, management, manufacturing, retailing and online publishing

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SEMESTER- II

SECTION-D

E-Commerce in India

EDI service providers in India, EDI projects in the government regulatory agencies. The Internet in India, laws for E-Commerce in India.

References: E-Commerce –The Cutting Edge of Business
-Kamlesh K. Bajaj
-Debjani Nag

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SEMESTER- II

PCA02010L: (Option-ii): e-COMMERCE / BUSINESS

Based on Theory Paper

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**SEMESTER- II
PCA02011T: (Option-iii) MULTIMEDIA SYSTEM**

Time: 3 Hrs.

**Max. Marks: 100
Theory: 50
Practical: 50
Credits: 2-0-2**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

The student can use only Non-programmable & Non-storage type calculator.

SECTION–A

- Introduction
- Different Media : Audio , Video , Text , Data

SECTION–B

- Integration of Different media
- Components of Multimedia system.

SECTION–C

- Hardware requirements of Multimedia system.
- Creation of Multimedia system.

SECTION–D

- Multimedia Databases.
- Multimedia over the Network(s).

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SEMESTER- II

PCA02012L: (Option-iii) MULTIMEDIA SYSTEM

Based on Theory Paper

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SEMESTER- II

PCA02013T: (Option-iv) Installation and Maintenance of Computer System

Time 3: Hrs.

**M.M: 100
Theory: 50
Practical: 50
Credits: 2-0-2**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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SECTION–A

Site Preparation:

Design of computer room, specification for flooring materials, falls roofing, disk tape library room, air-conditioning requirements and its maintenance. Temperature and humidity factor, need for dust proofing, different types of air conditioners and their applications, Design of computer room, power requirement of computer room, Need of stabilizer, CVT, UPS, simple principle of UPS and its advantages over normal power supply, earthing and its advantages; distribution board, fire detection and prevention for computer room.

SECTION–B

Installation:

layout planning of computer system, knowledge of installation procedure and manuals, cranking of off-line equipment, act all testing of computer system, using manufacture specified procedure, training the operator for small systems like PC. Installation of various kinds of printers. Installation of hubs and switches. Installation of network cable, fiber optic and UTP cabling.

SECTION–C

Maintenance:

Types of maintenance, preventive and corrective maintenance, site audit, importance of preventive maintenance, Use of diagnostic software like PC tools, QA++. Norton Commander, Macacffe, Smartdog, Typical symptoms of common hardware and software fault and understand the error, messages, some aid to chip level fault detection and its rectification, failure of equipment, knowledge of local parts substitution, Maintenance of printers.

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SEMESTER- II

SECTION-D

Practicals:

Prepare a project report for installation of PC. It must include need analysis for selecting a computer, steps taken during site preparation, installation report and preparation of maintenance history for the PC installed. The report will be evaluated by an external examiner and internal examiner and viva-voce will be conducted accordingly.

Recommended Books:

1. Manuals for UPS
2. Manuals for Air-conditioners

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SEMESTER- II

PCA02014L: (Option-iv) Installation and Maintenance of Computer System

Based on Theory Paper