

# POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

Course Duration: 1Year, 2 Semesters

Eligibility: Graduate in any discipline from a recognized university.

## SCHEME

### POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

#### SEMESTER I

- 1PGDCA1 Computer Fundamentals and AI Concepts
- 1PGDCA2 PC Packages with AI Essentials
- 1PGDCA3(A) - Digital Publishing: PageMaker, Photoshop & InDesign

#### OR

- 1PGDCA3(B) - Programming with Python
- 1PGDCA4(A) - MySQL Database Management

#### OR

- 1PGDCA4(B) - MS-Access Database Management
- Optional-1 Hindi Typing

## SEMESTER II

- 2PGDCA1 Emerging Digital Technologies
- 2PGDCA2 Web Development Technologies
- 2PGDCA3(A) - Financial Accounting with Tally

OR

- 2PGDCA3(B) Linux and Cyber Security Fundamentals
- 2PGDCA4(A) Multimedia Design and Production

OR

- 2PGDCA4(B) Data Visualization with Power BI
- Optional-II English Typing

Total Marks =450

General Instructions: 1. For passing the subject examination minimum 40% marks must be separately scored in Theory

Paper, Practical Exams and Internal Evaluation in the subject.

2. For passing the semester, minimum aggregate marks must be 45% in the semester.

3. For passing in Typing Test (English and Hindi) minimum 50% marks is required.

PGDCA Syllabus-2026

## 1PGDCA1-Computer Fundamentals and AI Concepts

UNIT I: Computer System Concepts, Application area, advantage & disadvantage, Components of a computer system - Control unit, ALU, Input/Output, Memory, Mother Board, Generations of computers, Configurations of Computer system, Types of PCs- Desktop, Laptop, Notebook, Palmtop, Supercomputers Characteristics and area of Uses, Primary Vs Secondary Memory, RAM, ROM, EPROM, PROM. Various Storage Devices- Hard Disk Drives, Zip Drive, Blue Ray Disc, Flash drives SD/MMC Memory cards, Solid-State Drive (SSD).

UNIT II: Input Devices: Keyboard, Mouse, Trackball, Joystick, Scanners, Digitizing tablet, Digital Camera, MICR, OCR, OMR, Light pen, Barcode & Barcode Reader, Quick Response Code (QR Code), Voice Recognition, Touch Screen. Output Devices: Monitors- Characteristics and types of Monitor, Size, Digital, Analog, Resolution, Refresh Rate, Interlaced/Non-Interlaced, Dot Pitch, Video Standard- VGA, SVGA, XGA etc. Printers and its Types Impact and Non-Impact printer, Dot Matrix, Inkjet, Laser, Plotter, 3D Printers, Sound Card and Speakers,

UNIT III: Software and Its Need, Types of Software- System Software, Application Software, System Software- Operating System definition & function, Device Drivers & Utility Programs, Introduction & Features of DOS, Windows, Linux, Mac, Android. Programming Languages- Machine, Assembly, High Level, 4GL, Their Merits and Demerits, Uses of Assemblers, Compilers and Interpreter. Introduction to Word Processing, Spreadsheet, Presentation Graphics, Data Base Management, Desktop Publishing, communication, Educational, Graphics & Multimedia, Business Accounting, MIS, Gaming and ERP

Software etc. Computer coding system-ASCII, ISCII and Unicode, Number system of computers- Binary, Octal, Decimal, Hexadecimal their conversion.

UNIT IV: Use of communication and IT, Communication Process, Component of communication sender, receiver, Transmission Medium & Protocol, Communication types- Simplex, Half Duplex, Full Duplex. Communication Channels- Twisted, Coaxial, Fiber Optic, Modem-Working and characteristics. Types of network- client/server and peer-to-peer networks, Types of connections Dialup, Leased Lines, ISDN, DSL, RF, Broad band uses, advantages & disadvantages. Types of Network- LAN, WAN, MAN, Internet, VPN etc., Topologies of LAN- Ring, Bus, Star, Mesh and Tree topologies- structure, uses, advantages & disadvantages. Components of LAN-Media, NIC, NOS, Network devices - Bridges, HUB, Routers, Repeater, Gateways uses, advantages & disadvantages.

UNIT V: Introduction to AI, History, Definition, and Applications of AI, Types of AI, Definition, Scope, and Goals of AI, History and Evolution of Artificial Intelligence, Advantages and Limitations of AI. Exploring AI-powered devices (e.g., smart assistants, image recognition tools). Introduction to Machine Learning and its Relationship with AI. Introduction to AI in the Internet World: Search Optimization, Chatbots, Recommendation Systems, Virtual Assistants, Modern AI Applications: Chatbots, Self-Driving Cars, Voice Assistants. Introduction to Microsoft Copilot.

## 1PGDCA2 PC Packages with AI Essentials

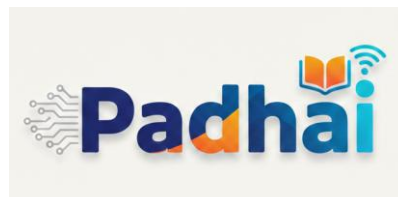
UNIT I: Operating System (Windows): Overview of Windows Operating System, Basic Operations How to Start a computer, login, logoff, hibernate, shutdown. Personalizing Desktop-Desktop Background, Screen Saver, Themes, Setting date & time, Task bar, Files & Folders, Create, Copy, Rename, Moving & Delete Files & Folders, Create & Using Shortcuts, Recycle Bin. Accessories-MS Paint, Notepad, WordPad, Windows Media Player, Calculator, Games, Math Input Panel, Language Settings-How to set other languages on computer Using Control Panel to add, remove or configuring new or existing devices, software programs and fonts, Enhance the performance of computer- using Disk Clean-up, using Disk Defragmenter. Using Internet in Windows: Basic Operations using Internet Browser-Working with browsers, Know about WWW, URL, Search Engines, Google Maps, Online Ticket Booking, Apply for PAN Card/Passport /Aadhar Card online, Pay electricity bill and Service tax online, Downloading eBooks. Introduction to AI and its relevance in daily computing tasks, Overview of AI Productivity Tools (ChatGPT, Copilot, Gemini, Notion AI)

UNIT II: Modern office activities and their software requirements, Introduction to Office Automation Suit, Elements of office suit & area of use. Word-processing, Spreadsheet, Presentation graphics, Database, Introduction and comparison of various office suites like Apache OpenOffice, Libre Office, WPS office, Google Docs & Microsoft office. MS Word Basics: Introduction to MS Office(2013), Introduction to MS Word, Features & Area of use. Various versions of MS Office

and their requirements, Working with MS Word, Menus & Commands, Ribbon, Toolbars & Buttons, Shortcut Menus, Wizards & Templates, Creating a New Document, Different Page Views and layouts, Applying various Text Enhancements- Fonts, Styles, Text Attributes, Formatting Your Text and Documents: Auto format, Paragraph and Page Formatting, Line spacing, Margins, Borders and Shading, Tabs and Indents, Text Editing using various features, Bullets, Numbering, Working with Styles, Printing & various print options, Spell Check Working with Headers and Footers. Tables: Creating a simple table, Creating a table using the Table Menu, Entering and editing text in a table, selecting in table, adding rows, changing row heights, Deleting rows, Inserting columns, Deleting columns, changing column width, conversion to and from text. Introduction to Google Docs, Smart Compose, AI Summarizer.

UNIT III: Graphics in MS-word: Importing graphics, Clipart, insert picture, Using Clip Art, Shapes and SmartArt in documents, using drawing features, drawing objects, text in drawing. Taking and inserting Screenshots in Documents, Using WordArt and Drop Cap features in documents. Templates: Template types, using templates, exploring templates, modifying templates. Mail Merge in MS Word, Mail Merge concept, Envelops & Mailing Labels, Importing and exporting to and from various formats, Macros in MS Word: Macro introduction and their use, recording macros, editing macros, running a macro. Creating Professional Reports with AI-generated Templates, Using AI tools for grammar checking and content suggestions,

UNIT IV:



MS Excel Spreadsheet Basics & features, concepts of Workbook & Worksheets, Getting started, Creating a new worksheet, Using Wizards, Various Data Types, Selecting cells, Entering and editing text, Entering and editing Numbers, Removing & Resizing of Columns & Rows, entering and editing Formulas, Referencing cells, moving cells, copying cells, sorting cell data, inserting rows, inserting columns, Inserting cells, Deleting parts of a worksheet, clearing parts of a worksheet, Different Views of Worksheets. Formatting: Cell Formatting, changing column widths and Row heights, auto format, changing font sizes and Attributes, centering text across columns, using border buttons and Commands, changing colors and shading, hiding rows and columns, Working with Data & Ranges, Column Freezing, Labels, Hiding, Splitting, merging etc. Charts in Excel: Chart parts and terminology, chart wizard, different types of charts, printing charts, deleting charts, Overview of AI-powered features in Windows (e.g., Copilot) Using AI in Excel: Data Insights, Trend Prediction, Using AI features like “Analyze Data” and ChatGPT for formula generation.

#### UNIT V:

MS PowerPoint: Introduction & area of use, Working with MS PowerPoint, Creating a New Presentation, Working with Presentation, Using Wizards; Slides & its different views, Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists, Adding Graphics, shapes, screenshots, Smart Art and charts in presentation, Sounds and Movies to a Slide; Working with PowerPoint Objects, Designing & Presentation of a Slide Show, change Slide backgrounds, Change Slide Size, Using Animation and Transitions in

presentation, Advanced Slide options Manual & Automatic, Printing Presentations, Notes, Handouts with print options, Slide Master, Handout Master and Notes Master. AI Tools for Presentation Creation (Beautiful.ai, Tome, Canva AI), Generate an AI-based presentation using online tools

## 1PGDCA3 (A) Digital Publishing: PageMaker, Photoshop & InDesign

UNIT-I: Introduction to Desk Top Publishing (DTP), Photocomposing Machines & DTP, Definition, Need and Area of Application. Use of DTP in Offset Printing & Web Designing, Use of Desk Top Publishing in Publications, Importance of D.T.P in Publication, Advantage of D.T.P in Publication, Page Layout & Designing in a single page production. Laser printers - Use, Types, Advantage of laser printer in publication Difference between a word processor and Publication Software, Use and importance of DTP in Publication & Newspaper Printing, Various DTP Software's and its application area Introduction to Offset Printing Technology, Printers, Formatting of a text: Typography, Fonts, Point Size, Spacing, Breaks, Measurements etc. DTP & Page Layout Designing Types of Printing: Lithography, Flexography, Gravure, Screen Printing, Offset Printing. Print Media & Offset Printing. Terms used in Offset Printing: Bleed, CMYK, Transparent Printouts - Bromide & Film. Halftone, Impression, Saddle Stitch, Perfect Bind, Negative & Positives for Plate were making

UNIT-II: Introduction to Adobe Page Maker 7.0, Aldus & Adobe Page Maker, Previous and current versions of Page Maker, Page Maker as a DTP Software, Difference between a Page Maker & Word Processing Software Attribute settings: Tools, Styles, Menus, Templates,

Alignments, Grids, Guides etc. Keyboard shortcuts, Templates & its use Page Layouts Margins and Page Orientations with various page sizes, Text Editing and Manipulation, Magazine & News Paper Page Layouts Filters, Import and Export options, Placing of Text and Images, Auto flow and Story Editor, Different Layout views, Control Palette, Layers & its use Tab setting, Columns & Gutters, Use of Styles, Palettes & Colors, Import & Export of files, Document Setup & Preferences. Master Pages and its use

UNIT-III: Adobe Page Maker-Page and document setup, working with rulers, setting the unit measurement, Bullets, Column Balancing, Breaks Arrange, Fill & Stroke Options. Text Wrapping, Widows & Orphan lines, Revert Command and its use, Using Drop Caps and various style formats, Editing of Graphics and Frames. Defining Styles OLE & Embedding, Plugins, Mathematic Equation, Table Editor and its use. Polygon Setting & Rounded Corners Master Pages, Headers & Footers, Frame Options, View Menu Options, Print Setup Options. Paste Multiple & Paste Special. Managing and Printing Publications Tiles, multiple copies etc. Use of Page Maker in News paper and Magazines, Various Page Layout Designing Practical's

UNIT-IV: Introduction to Adobe Photoshop, Photoshop Documents, Various Graphic Files and Extensions- JPG, GIF, PNG, TIF, BMP, PSD, CDR, SVG etc., The Photoshop Environment Graphic Files: Vector Image and Raster Images. Definition, Features, Area of application etc., Advantages and Disadvantages Vector & Raster Graphics, Bitmap Graphics and its qualities Pixels, Application Programs to work on Vector Graphics and Raster Graphics. Color

Modes and Color Models: HSB, RGB, CMYK, Bitmap, Gray Scale, Duotone. Color Mode Conversion Image: Image Size and Resolution, Changing Image Size and Resolution, Getting Image from Input Devices, Creating New image in Photoshop Using File Browser, Opening and Importing Selecting Image, Adjusting Pixel, Snap command, Saving and Loading Selection, Deleting Selection.

UNIT V: Photoshop Introduction PSD files, Screen and Work Area Interfaces: Menu Bar, Option Bar, Palette, Active Image Area, Tool Box List etc. Opening a File, Saving a File, Closing a File, Tool: Icons, Name and usage of Each tool, Setting History Option, Basic Image Manipulations, Photoshop Layers & Palettes: Use of Layers, Creating using layer, Using layer palette, Working with layered Image: Layer and Layer sets, Selecting Layers, Displaying Content of a Layer, Duplicating Layers, Changing Order of Layers, Renaming & Deleting Layers Filters: Using Filter Gallery, Filter Gallery Dialogue box, Applying and Blending Filters, Choosing various Filter Effects, Masking Tools & Effects, Using Channels. Introduction to InDesign, Interfaces, Commands & options, inserting text & images, news paper & magazine page designing in InDesign. Introduction to Microsoft Designer and Figma.

## 1PGDCA3 (B) Programming with Python

UNIT-I: Python Basics: Introduction to Python, Python IDLE, features, basic data types, variables, expressions, statements, operators, flow of execution, Input and Output statements. Conditional statements: if, if-else, else-if, Iteration: while, for, break, continue, Pass, Creating and executing: py scripts.

UNIT-II: Lists: append, extend, insert, index, remove, pop, count, sort, reverse, slicing, list comprehension, Copying a list deep copy, shallow copy. Tuples: index, count. Usage, use of tuples as a swap function. Dictionaries: keys, values, tuples, nested dictionaries. Strings: single line and multi-line strings, formatter, isdigit, isalpha, isalnum, islower, isupper, isspace, title, lower, upper, strip, split. splitlines join etc. Sets: union, intersection, subset, superset, difference, symmetric difference, copy, add, remove, discard etc.

UNIT-III: Functions & File Handling: Built Functions- id, len, chr etc., defining and calling function, arguments, global versus local variables, defining and using lambda functions, map(), filter(), reduce() functions. Working with files: read, write and append modes: r, w, a, r+, w+, a+, readingread(), readline(), readlines(), writingwrite(), writelines(), seek(), tell().

UNIT-IV: Introduction to Classes, modules, OOP concepts in Python. Working with Databases using MySQL: Introduction to MySQL, connecting to database. creating, accessing and modifying tables, using insert, select, update, delete, drop commands in Python. Exceptional Handling: The tryexcept-else-finally block, the raise statement, the hierarchy of exceptions, adding exceptions.

UNIT-V: Introduction to Python Libraries-Pandas, Matplotlib. Importing and Exporting Data in Python. Data Visualization: Drawing and saving different types of plots using Matplotlib-line plot, bar graph, histogram etc.

## 1PGDCA4 (A)- MySQL Database Management

### UNIT I:

Introduction to database concept , Need of database, Flat Database, Database Management System, Characteristics of DBMS ,Relational Database, Entity and Referential Integrity, Database Concept of primary key, Database Application Example, Banking, Railways, School, Retail Store. Database Elements - Tables, Query, Form, Report, Introduction to Client Server paradigm.

### UNIT-II:

My SQL Database, Its Features, Installation on Windows, Making it works on Command Line, Using the Built in Database, Running and Shutting down MySql Server, Setting up MySql user account. CREATE and DROP database, Important Administrative Mysql database commands SHOW DATABASE, USE DATABASE, SHOW TABLES, SHOW COLUMN, and SHOW INDEX.

### UNIT III:

Database Query Commands DDL, DML, DCL, Creating Tables Using SQL Commands, Using various Data Types, Applying constraints on Tables, Updating, Deleting MySQL Tables, Inserting Data, Updating and Deleting Data - Retrieving Data From a MySQL Database- Sorting Data Retrieved from a MySQL Database- Using WHERE to Filter data. SQL Functions and Operators Control flow function, String Function, Numerical Function.

### UNIT IV:

Data- Advanced MySQL Data Filtering- AND, OR, NOT and IN- MySQL Wildcard Filtering using LIKE- MySQL Regular Expression Searches - Joining Tables in MySQL, Applying Grouping of data by Group By, MySQL Data Aggregation Functions- MySQL Users and Security- Administering and Monitoring MySQL using the MySQL Commands. Unit V: Example Applications for My Sql database- Workbench and PhpMyAdmin, Graphical user Interface of PhPMyAdmin, PhPMyAdmin Features, Installation, Use of different section of PhpMyAdmin, Managing database with PhPMyAdmin, Browse, Structure, Search, Insert, Empty, Drop, Create new tables and add data, Execute MySql query with sql tab.

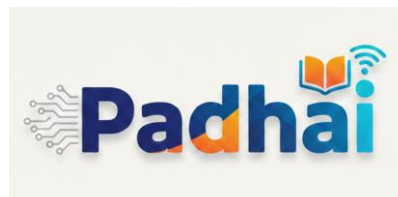
## 1PGDCA4 (B)- MS-Access Database Management

### UNIT I:

Introduction to database -What is a Database, Why use a Relational Database, Overview of Database Design- Data Normalization (Determining tables, Determining Fields, Determining Relationships) Integrity Rules (Primary/Foreign Key, One-to-Many, Many-to-Many, One-to-One) Introduction to MS Access (Objects, Navigation).

UNIT II: Tables in Database, Create a Table in MS Access- Data Types, Field Properties, Fields: names, types, properties- default values, format, caption, validation rules Data Entry, Add record delete record and edit text, Sort, find/replace, filter/ select, rearrange columns, freeze columns. Edit a Tables- copy, delete, import, modify table structure, find, replace.

### UNIT III:



Working with Query, Setting up Relationships- Define relationships, add a relationship, set a rule for Referential Integrity, change the join type, delete a relationship, save relationship Queries & Filter - difference between queries and filter, filter using multiple fields AND, OR, advance filter Queries, create Query with one table, find record with select query, find duplicate record with query, find unmatched record with query, run query, save and change query.

UNIT IV: Working with Forms, Introduction to Forms Types of Basic Forms: Columnar, Tabular, Datasheet, Main/Subforms, add headers and footers, add fields to form, add text to form use label option button, check box, combo box, list box Forms Wizard, Create Template.

UNIT V: Working with Reports, Introduction to Reports, Types of Basic Reports: Single Column, Tabular Report Groups/Total, single table report, multi table report preview report print report, Creating Reports and Labels, Wizard. Reference Books:

## SEMESTER-II

### 2PGDCA1 Emerging Digital Technologies

UNIT-I: Overview of IT and its Evolution: Role of IT in the Digital Economy, Impact of IT on Society, Education, E-governance, e-democracy, Government efforts to encourage citizen participation, PPP model, E-governance websites & services, MPONLINE services, UIDI & Aadhar, Egovernance mobile apps like UMANG, Digital Locker, Digital Library., E-Commerce- introductions, concepts, Benefits and impact of e-commerce. Electronic Payment Systems: Introduction, Types of

Electronic Payment Systems, RTGS, IMPS, NEFT, Payment gateway, debit & credit card, internet banking, mobile wallet, UPI, BHIM, PAYTM app, online shopping, online marketing. Green Computing and Sustainable IT Practices, Applications of AI, Cloud, or IoT.

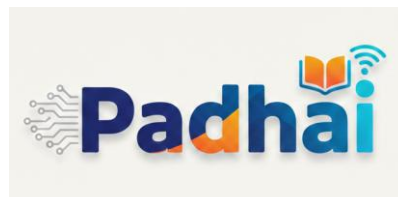
UNIT-II: Cloud Computing and Virtualization: Introduction to Cloud Computing and its Architecture, Types of Cloud: Public, Private, Hybrid, Community, Service Models: IaaS, PaaS, SaaS, Virtualization Concepts: Hypervisors, Virtual Machines, Containers, Cloud Security, Privacy, and Challenges, Major Cloud Providers: AWS, Microsoft Azure, Google Cloud.

UNIT-III: Artificial Intelligence, Machine Learning & Data Analytics: Introduction to AI and ML Concepts, AI Applications in Automation, Healthcare, Education, and Business, Overview of Machine Learning Models: Supervised, Unsupervised, Reinforcement Learning, Basics of Data Science and Data Analytics, Predictive Analytics and Business Intelligence Tools, Introduction to Generative AI and Chatbots.

UNIT-IV:

Internet of Things (IoT), Blockchain & Cybersecurity: Internet of Things (IoT): Concepts, Architecture, and Applications, Smart Devices, Sensors, and Communication Technologies, Blockchain Technology: Structure, Function, and Use Cases, Introduction to Cryptocurrencies and Smart Contracts Fundamentals of Cybersecurity: Threats, Attacks, and Prevention, Data Privacy, Cyber Laws, and Digital Ethics

UNIT-V:



Emerging Digital Technologies and Future Trends : 5G and Edge Computing, Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality, Robotic Process Automation (RPA) and Chatbots, Quantum Computing: Concept and Applications, Green and Ethical IT Practices, Future Career Paths and Certifications in Emerging IT Fields, Introduction to Computer Vision, Introduction to cryptocurrency.

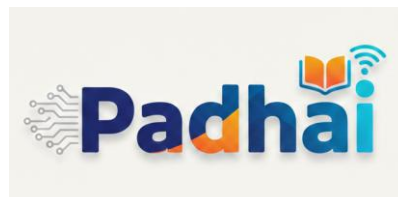
## 2PGDCA2 Web Development Technologies

### UNIT I:

Introduction to Internet - Internet Evolution & Concept, Internet Vs Intranet, Growth of Internet, Internet Service Provider (ISP) & its Function, Connectivity- Dialup, Leased line, VSAT , URLs, Portals, Internet Services, Applications. E-MAIL- Basics of Sending & Receiving, Free Email services, Internet chatting - Voice chat, Text chat, World Wide Web (www)- History, Working, Web Browsers & its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols, Networks layers & TCP/IP Protocols, The Advantages and disadvantages of Internet and World Wide Web.

UNIT II: HTML- Concepts of Hypertext, Versions of HTML, Elements of HTML, Syntax, Tags & Attributes, Head & Body Sections, Building, HTML Documents. Inserting Texts, Images, Hyperlinks, Backgrounds And Color Controls, Different HTML Tags, Table Layout and Presentation, Creating Lists, Use of Font Size & Attributes, List Types and Its Tags, Use of Frames and Forms in Web Pages, Creating Frameset, Opening pages into frames, Design Forms Control.

### UNIT III:



Cascading Style Sheet (CSS) Introduction, creating style , using inline and external CSS, Creating Divs with ID style, creating Tag & Class style using font family, size and colors, creating borders, Navigation links, creating effects with CSS, JavaScript Overview, syntax & conventions, Variables, Expressions, Branching & Looping statements, Functions, Arrays Objects, Events & Document Object Model - onClick, onMouseOver, on Submit, on Focus, on Change, onBlur, onLoad, onUnload, Alerts, Prompts & Confirms.

#### UNIT IV:

Designing Websites with Expression Web Introduction to WYSIWG HTML editor, advantages of using HTML editors, Creating a new site, Creating a new Page, Inserting and formatting text, Creating & Inserting Images, Adjusting Transparency settings, Adding Images with alternative Text, Aligning images, creating Email Link, Linking to other websites, Testing and targeting Links, Organizing files & folders, Designing Accessible Tables, styling a table, Editing table layouts, Adding style to a table using CSS.

#### UNIT V:

Word Press- What is Word Press, Installation, Login, overview of admin panel, user profile, Word Press Themes, Themes depository, Create & add a new logo, Set up a static home page, Create Posts, Delete pages, Create Menu, Add a post, Delete a post, Add Widgets, Upload images, Add Images To a post, Insert and Format Text, Add a Hyperlink to an image, Add a Hyperlink to some text, Protocols-meaning, different web protocols- FTP, DNS, TCP, UDP, HTTP, IP

Telnet Concept, FTP Commands - viewing Files and directories, Transfer and rename files, FTP with Filezilla & CuteFTP, Web Hosting Concept, Introduction to Domain Name & DNS, procedure to register a Domain Name, Procedure for web hosting, Space on Host Server for Website.

## 2PGDCA3 (A) Financial Accounting with Tally

### UNIT I: Accounting Fundamentals

Introduction to Accounting - Meaning, Objectives & Importance, Types of Accounting (Financial, Cost, Management), Users of Accounting Information, Basic Accounting Terms & Concepts - Assets, Liabilities, Capital, Income, Expenditure, Profit, Loss, Debtors, Creditors, Double Entry System, Golden Rules, Concepts: Accrual, Matching, Going Concern, Consistency, Prudence, Accounting Process - Journal Entries, Ledger Posting, Trial Balance Preparation, Subsidiary Books & Cash Book - Purchase, Sales, Returns Books, Single, Double & Triple Column Cash Books, Final Accounts - Trading Account, Profit & Loss Account, Balance Sheet (with Adjustments), Financial Statement Analysis - Fund Flow Statement, Meaning, Sources & Applications of Funds, Schedule of Changes in Working Capital, Cash Flow Statement, Cash Flow from Operating, Investing & Financing Activities, Format as per AS-3, Ratio Analysis - Liquidity Ratios (Current, Quick), Profitability Ratios (Gross Profit, Net Profit, Return on Capital), Solvency Ratios (Debt-Equity, Interest Coverage), Activity Ratios (Stock Turnover, Debtors Turnover), Interpretation & Decisionmaking, Practical Exercises & Mini Project - Manual preparation of Journal, Ledger, Trial Balance, Final Accounts, Preparation of Fund Flow, Cash Flow & Ratios for a sample business case.

UNIT-II: Introduction to Tally Prime & Basic Accounting Entries  
Introduction to Tally Prime - Features & Advantages, Installing & Navigating Tally Prime, Company Creation, Backup & Restore, Basic Tally Operations - Gateway of Tally, Company Features &

Configurations, Security & Password Management, Accounting Masters - Creating & Altering Groups, Ledgers, Chart of Accounts, Voucher Entries - Contra, Payment, Receipt, Journal, Purchase, Sales, Debit Note, Credit Note, Day Book, Trial Balance & Basic Reports - Viewing & Printing Vouchers, Understanding Day Book & Trial Balance, Banking Features - Bank Reconciliation, Cheque Printing & Deposit Slips, Payment Advices, PDC Voucher, Non Accounting Vouchers Memorandum Voucher, Reversing Journal, Optional, Cost Centers & Cost Categories, Budgeting & Scenario Management

### UNIT III:

Inventory Management in Tally Prime Introduction to Inventory Management, Inventory Masters - Stock Groups, Stock Categories, Stock Items, Units of Measurement, Compound Units, Godowns, Inventory Vouchers - Purchase Order, Sales Order, Delivery Note, Receipt Note, Rejection Out, Rejection In, Stock Journal, Physical Stock, Invoicing & Billing - Item Invoicing vs Accounting Invoicing, Multiple Price Levels & Lists, Discounts, Defining standard cost & selling price, Defining MRP, Actual & Billed Quantity, Inventory Reports - Stock Summary, Movement Analysis, Shortage, Ageing, Batch-wise Reports, Purchase Register, Sales register.

### UNIT-IV:

GST in Tally Prime Overview of GST - Concept, Structure (CGST, SGST, IGST, UTGST), GST Registration, Returns, Tax Rates, GST Configuration in Tally - Enabling GST, Creating Tax Ledgers, Assigning GST Details to Masters, Recording GST Transactions - Intra-state &

Inter-state Sales & Purchases, Taxable & Exempt Transactions, Reverse Charge Mechanism, GST Reports & Returns - GSTR-1, GSTR-2, GSTR-3B, Input Credit Summary, Generating & Exporting Reports for Filing.

#### UNIT-V:

Advanced Accounting Features TDS, MIS & Reports TDS (Tax Deducted at Source) - Introduction to TDS & Applicability, TDS Ledgers & Configuration in Tally, Recording TDS on Expenses & Payments, TDS Reports, MIS Reports & Analysis - Balance Sheet, P&L, Ratio Analysis, Cash Flow & Fund Flow Statements, Management Reports & Export Options, Project Work & Assessment - Full Accounting Cycle in Tally with GST & TDS, Real-world business scenario simulation

## (B) Linux and Cyber Security Fundamentals

#### UNIT I:

LINUX BASICS AND ESSENTIAL TOOLS: Introduction to Linux: Linux Distributions (Ubuntu, CentOS, Kali Linux), Open Source Software, Windows vs Linux Comparison, Installing Linux on Virtual Machine (VirtualBox), Logging in to Linux (GUI and CLI) , Essential Linux Command ls, cp, mv, rm, mkdir, cd, pwd, man, help and info, Working with the Bash Shell, Using I/O Redirection and Piping (>, >>, |, <), Command History, Variables and Environment Variables, Essential File Management Tools, Understanding the Linux File System Hierarchy (/ , /home, /etc, /var, /tmp), Using Wildcards, Linux File System Structure (/home, /etc, /bin, /usr, /root), File and Directory Commands: pwd, cd,

ls, mkdir, rmdir, cp, mv, rm, Viewing and Editing Files: cat, more, less, head, tail, nano, vi, Archiving Files with tar, Managing File Compression (gzip, bzip2), Understanding vi/vim Text Editor, creating and editing text Files, Browsing Text Files , Displaying File Contents with cat and tac, Working with grep for text Search, Regular Expressions, Common Text Processing Utilities (cut, sort, uniq).

## UNIT II:

**USER MANAGEMENT AND SYSTEM ADMINISTRATION** User and Group Management, File Permission Representation (r, w, x), Changing Permissions: chmod, chown, chgrp, Creating Users with useradd , groupadd Managing User and Group Properties, Configuring Defaults for New Users, Managing Password Properties, Understanding User and Group Configuration Files (/etc/passwd, /etc/shadow, /etc/group), Managing Current Sessions (who, w, last), Connecting to a Server, Understanding the root user, Using su and sudo Commands, Simple sudo Configuration, Using SSH to Connect to a Remote Server, Configuring SSH Key-Based Authentication, Understanding Working with Systemd, Managing Systemd Services with systemctl, Starting, Stopping, Enabling, and Disabling Services, Understanding Targets and Runlevels, Managing Networking, Understanding Networking Basics (IP Address, MAC Address, Ports), Understanding IPv4 Basics, Applying Network Configuration (GUI, CLI, nmtui), Using Common Network Tools (ping, traceroute, netstat, ifconfig/ip), Using nslookup and dig for DNS Queries, Understanding DNS and DHCP Basics, Understanding Linux Firewalling Basics



UNIT III: CYBERSECURITY FUNDAMENTALS Introduction to Cybersecurity, Understanding Cybersecurity Concepts, CIA Triad (Confidentiality, Integrity, Availability), Common Cyber Threats (Phishing, Malware, Ransomware, Social Engineering), Understanding Attack Vectors and Threat Actors, Data breach, Essential File Management Tools, Essential File Management Tools, Career Opportunities in Cybersecurity, Password Security, Creating Strong Passwords, Using Password Managers, Understanding TwoFactor Authentication (2FA), Setting up 2FA on Common Platforms, Checking Compromised Credentials with Have I Been Pwned, Understanding Email Security Threats , Analyzing Email Headers, Identifying Phishing Emails, Understanding HTTPS vs HTTP, Using WHOIS Lookup for Domain Information, Safe Browsing Practices.

UNIT IV: SECURITY TOOLS AND PRACTICAL TESTING Information Gathering Tools, Understanding OSINT (Open Source Intelligence) ,Using WHOIS for Domain Lookup,Using the Harvester for Email Collection, Introduction to Shodan Search Engine, Google Dorking Techniques, DNS Enumeration with nslookup and dig, Network Scanning with Nmap, Understanding Port Scanning Concepts, Basic Nmap Scans (Host Discovery, Port Scan) , Service and Version Detection, Understanding Scan Results, Packet Analysis with Wireshark, Understanding Network Packet Analysis, Using Capture and Display Filters, Analyzing Common Protocols (HTTP, DNS, TCP), Password Cracking Tools, Understanding Hash Functions (MD5, SHA), Introduction to Password Cracking, Using John the Ripper Tool for Password Cracking, Cracking ZIP and RAR Password Protected Files,

Dictionary Attacks and Wordlists, Using Online Hash Crackers, Introduction to Hashcat Tool , Wireless Network Security, Understanding Wi-Fi Security Viewing Nearby Wireless Networks, Introduction to Airodump-ng Tool, Understanding WPS Vulnerabilities, Wireless Security Best Practices.

## UNIT V:

CYBERSECURITY AWARENESS & DIGITAL SAFETY Securing Personal Email Accounts, Common email-based attacks, Securing Gmail Account , Enabling Two-Factor Authentication (2FA), Account Recovery Setup, Checking security activity, Removing unknown devices, Social Media Security & Privacy, Private vs public accounts, Recognizing fake followers, WhatsApp Security, WhatsApp scams, Online Banking & Payment Security, Safe Online Banking Practices, UPI and Digital Wallet Security, Safe QR code scanning practices, Google Pay, PhonePe, Paytm security settings, Setting UPI transaction limits, Credit/Debit Card Safety, Using virtual cards for online shopping, CVV importance, Types of financial Frauds, Mobile Device Security, Android Security Settings, Google Play Protect, Security updates, App permissions review, Face ID / Touch ID setup, Risks of public Wi-Fi, Using VPN on public networks, Common Cyber Frauds in India, Types of Phishing and Vishing, Social Engineering Attacks, Understanding Cybercrime Portal, Cybercrime.gov.in, National Cybercrime Reporting Portal (NCRP), Types of complaints that can be filed, Evidence before filing, Change all passwords after fraud, Alternative Reporting Methods, Helpline: 1930, Local Police Station Cyber Cell, Bank Fraud Reporting.

## 2PGDCA4 (A) Multimedia Design and Production

### UNIT-I:

Introduction to CorelDraw, Usage and Advantages, Introduction to User Interface, Introduction to tool panel and workspaces, Introduction to various size and formats of panels and layouts, File layouts and layout properties, Objects and using color profiles.

UNIT-II: Text tools and text properties, Creating Vector graphics by using editing tools, Importing Images and graphics in Corel draw layout, Creating shapes and editing shapes, Drawing curves and editing curves, Creating special text effects, Creating special object effects, Using color effects.

UNIT-III: Using grid and rulers, Tracing images and graphics, working with borders and page arrangements, Using Masking effects with Text, Using Masking effects with objects

UNIT IV: Adobe Premier: Introduction, Area of Use, Setting up new Project, Workspace: Project Video Display, Selected Clip Display, project panel Project Timeline Toolbar, Toolbar description: Selection Tool, Track Select Forward Tool, Track Select Backward Tool Ripple Edit Tool, Rolling Edit Tool, Rate Stretch Tool, Razor tool, Slip tool, Slide Tool, Pen Tool, Hand Tool, Zoom Tool.Importing files into Premier, Sequence, Titles, Video Motion, Video Opacity, Transition Panel, Effect panel, Color Correction, Adjusting Video Speed, Saving Project, Exporting Video

UNIT V: Sound Forge: Introduction, Interface, Editing Toolbar, Transport toolbar, Opening new file, playing a file, playing file from specific

point, playing a selection, Basic Sound Editing: Copying, Pasting, Cutting, Deleting, Cropping, Mixing, Recording Audio Normalizing, Using Markers, Noise Reduction.

## 2PGDCA4 (B) Data Visualization with Power BI

ELECTIVE -IV

UNIT I:

Introduction to data visualization, The data visualization process, Importance of data visualization, Model of communication systems, Types of Communication Problems- technical, semantic and effectiveness, Data types, relationships, and visualization formats, Basic principles for data visualization - Principles of Communicating Data- Know your goal, use the right data, select suitable visualizations, design for aesthetics, choose an effective medium and channel, check the results, Data storytelling for social and market communication, Trends in market research and data visualization dashboards.

UNIT II:

Power BI - Introduction, Features, Power BI Products, Power BI Architecture, Download and Installation of Power BI, Using Desktop Workspace, Power BI User Interface, Workspace, Toolbar, Menu, Visuals, Dashboards, Fields Pane, Data Types, File Types.

UNIT III:

Data connection with data sources like Text File and Microsoft Excel, Power BI Calculations Calculated Columns, Measures, Quick Measures using DAX (Data Analysis Expressions), Power BI

Expressions Field, Operator, Constant, Parameter, and Comment,  
DAX Operators General operators, Arithmetic operators, Relational operators, and Logical operators, DAX Functions Number functions, Text functions, Date functions, Logical functions, and Aggregate functions, Data transformation using Power Query Editor Merging, Appending, Splitting, Filtering, and Cleaning data, Power BI Filters Basic Filters and types: Visual-level, Pagelevel, Report-level filters.

#### UNIT IV:

Visual displays of information simple text, tables, graphs, points, lines, bars, area Power BI charts & visuals bar chart, line chart, pie chart, column chart, bubble chart, area chart, donut chart, scatterplot, tree map, waterfall chart, gauge, matrix, cards, slicers ,Creating interactive dashboards designing reports using visuals, configuring drill through and tooltips

#### UNIT V:

Clutter, gestalt principles of visual perception proximity, similarity, enclosure, closure, continuity, and connection types of visual clutter lack of visual order, alignment, white space and non-strategic use of contrast, pre-attentive attributes design principles for effective data communication use of layout, color, contrast, and minimalism in power bi best practices for designing user-centric, accessible power bi reports