

DCA Syllabus

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1DCA1- Computer Fundamentals and AI Concepts

UNIT-I:

Computer System Concepts, Applications, 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, Flash drives, SolidState Drive (SSD).

UNIT-II:

Input Devices: Keyboard, Mouse, 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, Resolution, 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 to DOS, Windows, Linux, Mac, Android Operating System. Introduction to Programming Languages Machine, Assembly, High Level, 4GL, Introduction to Assemblers, Compilers and Interpreter. Introduction to Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software etc. Computer coding system-ASCII, ISCII and Unicode, Number system of computers Binary, Octal, Decimal, Hexadecimal.

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- LAN, WAN, MAN, Internet, VPN etc., Components of LAN- Media, NIC, NOS, Network devices - Bridges, HUB, Routers, Repeater, Gateways.

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 Disadvantages of AI. Exploring AI-powered devices (e.g., Smart Assistants, Image Recognition Tools). Introduction to Machine Learning and its Relationship with AI. AI in the Internet World: Search Optimization, Chatbots, Virtual Assistants, Modern AI Applications: Chatbots, Self-Driving Cars, Voice Assistants. Overview of Microsoft Copilot and Windows AI

1DCA2 - PC Packages and AI Office Tools

UNIT-I:

Operating System (Windows11): Overview of Windows Operating System, Basic Operations How to Start a computer, login, logoff, 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, Language Settings How to Set other languages on computer Using Control Panel to add, Remove Program, Configuring New or Existing Devices, Software and fonts, Enhance the Performance of Computer- Using Disk Clean-up, Using Disk Defragmenter. Using Internet in Windows: Basic Operations using web browser and its functions, Know about WWW, URL, DNS, Search Engines, Google Maps, 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, Introduction and comparison of various office suites like , OpenOffice, Libre Office, Google Docs & Microsoft office. MS Word Basics: 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 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 and editing simple table. Introduction to Google Docs, Smart Compose, AI Summarizer

UNIT-III:

Graphics in MS-word (2019): 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. using 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 (2019), Basics & features, concepts of Workbook & Worksheets, 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 Data, Inserting Rows and Columns, 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 Splitting and Merging, Working with Data & Ranges, Column Freezing, Charts in Excel, Types of 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(2019): Introduction & Area of use, Creating a New 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, Slide Show, Change Backgrounds, Change Size, Using Animation and Transitions in Presentation, Printing Presentations.
AI Tools for Presentation Creation (Beautiful.ai, Tome, Canva AI), Generate an AI-based presentation using online tools

1DCA3 (A) - Database using MS Access

UNIT I:

Definition of data and information, Definition, objectives, advantages and limitations of DBMS; comparison with traditional file systems. Types of Databases, Hierarchical, Network, Relational, Object-Oriented, and NoSQL databases, Database Architecture, Data Models, Overview of Entity-Relationship (ER) model, Introduction to Relational Database, Concepts of tables, rows, columns, keys (primary key, foreign key), and constraints. Applications of DBMS. 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

1DCA3 (B) - Database using MySQL

UNIT I:

Introduction to database concept , Need of database, Flat Database, Database Management System, Characteristics of RDBMS, Introductions to different types of keys used in DBMS, Database Elements - Tables, Query, Form, Report. Use Commands

UNIT II:

My SQL Database, Its Features, Installation on Windows, Making it works 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,- Using SLECT, WHERE. SQL Functions and Operators, Control flow function, String Function, Numerical Function. CREATE DATABASE, CREATE TABLE, ALTER TABLE, DROP TABLE, DELETE TABLE, DESCRIBE, UPDATE, INSERT INTO, ALTER DATABASE.

UNIT IV:

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 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.

SEMESTER-II

2DCA1–Multimedia and Current IT Trends

UNIT I:

Introduction to Multimedia, Definition and concept, Need of Multimedia, Applications, Multimedia Elements- Text, Images, Sound, Animation and Video, Multimedia Hardware and Software requirement. Making simple Multimedia with PowerPoint.

UNIT II:

Text and Image, introduction to Text and Image, Typography basics: fonts, styles, formatting, Image types: Raster and Vector, Color models: RGB, CMYK, Image file formats: JPEG, PNG, GIF, TIFF, Image editing techniques: cropping, resizing, retouching, filters, Working with layers, grids, and alignment. Audio and Video, Basics Audio and Video, Basics of digital audio: frequency, sampling, formats (MP3, WAV), Audio editing techniques: cutting, mixing, adding effects, Video basics: resolution, frame rate, formats (MP4, AVI) Video editing techniques: trimming, transitions, effects, subtitles.

UNIT III:

Animation and Authoring Tools, Principles of animation (timing, motion, frames), Types of animation: 2D and 3D, Creating interactive presentations and applications. Advanced Multimedia Applications, Basics of UI/UX design, Compression and streaming techniques, Multimedia project development lifecycle, Introduction to AR/VR and Immersive Media..

UNIT IV:

Artificial Intelligence (AI) and Machine Learning (ML) : Concepts, types, applications in real-world systems. Expert System, Introduction to Generative AI tools (e.g., ChatGPT, Gemini, Copilot). Data Science and Big Data Analytics: Data lifecycle, tools, importance in decision-making. Cloud Computing : Concepts, service models (IaaS, PaaS, SaaS), deployment models (public, private, hybrid).

UNIT V:

Internet of Things (IoT): Architecture, components, applications (smart homes, healthcare, smart cities). Blockchain Technology: Basic concepts, working mechanism, applications (cryptocurrency, security). Cybersecu Cybersecurity Trend : Emerging threats, ethical hacking, data protection techniques.

2DCA2-Web Technologies and E-Commerce

UNIT I:

Fundamentals of Web Technologies: Introduction to Internet and World Wide Web, Web browsers and web servers, Client-server architecture, Publishing concepts, Domain Name Registration. Definition of protocol, Role of protocols in network communication, DNS working process, Role of DNS in resolving domain names. Web protocols: HTTP, HTTPS, FTP, Domain names and web hosting,

UNIT II:

Concept of HTML: Concept of web pages, role of HTML in web development, structure of an HTML document. HTML editors, Tags and attributes, Syntax, Head & Body Sections, Building, Inserting Texts, Images, List & its type, Hyperlinks, Backgrounds and Color Controls, Table Layout and Presentation, Use of Font Size & Attributes, List Types and Its Tags, Use of Frames and Forms. Introduction to CSS: styling, layouts, responsive design basics.

UNIT III:

Client-Side and Server Side Technologies : Introduction to JavaScript, Variables, data types, operators, Control structures and functions, Arrays Objects, Events & Document Object Model- onClick, onMouseOver, on Submit, on Focus, on Change, onBlur, onLoad, onUnload, Alerts, Prompts & Confirms. Introduction to AJAX and JSON, Overview of modern front-end frameworks (React, Angular – basic concepts) Introduction to server-side scripting (PHP / Node.js – basics), Database connectivity (MySQL or similar),

UNIT IV:

Introduction to E-Commerce: Introduction to E-Commerce: concepts, scope, advantages and limitations, ECommerce models: B2B, B2C, C2C, C2B. E-Business vs E-Commerce, Electronic payment systems: credit/debit cards, net banking, UPI, wallets, E-Commerce security issues and solutions (encryption, SSL, digital signatures), Legal and ethical issues in E-Commerce.

UNIT V:

E-Commerce Applications and Emerging Trends: E-Commerce website design and development basics, Shopping cart, checkout process, order management, Supply chain and logistics in E-Commerce, Digital marketing: SEO, SEM, social media marketing, Mobile commerce (M-Commerce), Emerging trends: AI in E-Commerce, personalization, chatbots.

2DCA3 (A)–Digital Media Publishing

UNIT-I:

Introduction to Desk Top Publishing (DTP), Definition, Need and Area of Application. Use of DTP in Offset Printing & Web Designing, Use of DTP in Publications and 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. 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 it 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. 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., 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.

2DCA3(B)-Graphic Design with CorelDRAW

UNIT I:

Graphics in Multimedia, Importance of Graphics in Multimedia, Vector and Raster Graphics, Image Capturing Methods Scanner, Digital Camera Etc. Various Attributes of Images - Size, Color, Bit Depth, Resolution etc, Various Image File Format BMP, DIB, EPS, PIC, and TIF Format Their Features and limitations.

UNIT II:

Video and Animation in Multimedia, Impact of Video in Multimedia, Basics of Video Analog and Digital Video, How to use video on PC, Brief note on various video standards PAL, NTSC, Different file formats and their use in Multimedia, MPEG, AVI, MJPG, Name of video editing software, Basics of Animation, Types of Animation and use of Animation, Software for Creating Animations.

UNIT III:

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 IV:

Text tools and text properties, Creating Vector graphics by using editing tools, Importing Images and graphics in CorelDRAW layout, Creating shapes and editing shapes, Drawing curves and editing curves, Creating special text effects, Creating special object effects, using color effects.

UNIT V:

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