

TAMIL NADU PUBLIC SERVICE COMMISSION
SYLLABUS
INFORMATION TECHNOLOGY
(DIPLOMA STANDARD)

CODE: 453

UNIT-I : DIGITAL WORKSPACE

Working with MS: WORD, EXCEL, POWERPOINT, GOOGLE: sheets, docs, slides - Collaborating - Canva - designing - INTERNET: Applications of Internet - Getting connected to Internet - World Wide web (www) - E-mail- Creating E-mail id, Sending, Receiving, Attaching Document - Popular Web Browsing Software - Usage of Browsers - Usage of search engines - Computer Ethics - Social Networks and E-Commerce - overview of video and web conferencing tools, texting tools. Productivity tools in the browser-extension, Introduction to cyber security- Information management - Google Drive - sharing, permission. Scheduling meetings - Google Calendar. Information management- using google forms. Video Conferencing - Webex, zoom, Google Meet.

UNIT-II : C PROGRAMMING & DATA STRUCTURES

Program - Introduction to C - Variables, Constants & Data types - C operators - I/O statements - Control Statements - Arrays - Strings - Built in functions - User defined functions - Structures & Unions - Pointers - Dynamic memory allocation - Command line arguments - Introduction to Data structures - Stack - Queue - Linked list - Trees - bubble sort - quick sort - linear search - binary search.

UNIT-III : OPERATING SYSTEMS AND SYSTEM ADMINISTRATION

Types of Operating Systems - Operating System Components - Command interpreter - Operating System functions and Services - Operating System Structures - types of User Interface - Processes - Process

states, scheduling – types of schedulers - scheduling algorithms - Inter-process Communication and Synchronization, Deadlocks.

System Administration – Role of System Admin – Workstation – Server.

Linux: Architecture – Distribution – Kernel – Account Management – User and Group Management in Linux and related Commands – GRUB Boot Loader – Access Control – File System access Control – Process Ownership – Management of Root Account.

Windows Operating System - Client OS Features and Server OS Features – Creating and Managing Local Users and Group.

UNIT-IV : COMPUTER ARCHITECTURE

Register transfer - Micro operations and ALU - Central processing unit - Control unit - Input Output Interface - Asynchronous data transfer - Modes of transfer - I/O Processor - Memory types - Main Memory - Secondary Memory - Cache - Memory Management - Memory Management Hardware – Microprocessor (8086) - Parallel processing - Pipelining - Vector Processing - Symmetric Multiprocessors - Multithreading and clusters - NUMA and Vector.

UNIT-V : OOPS WITH JAVA

Basic concepts of Object Oriented Programming - Java features – Java Environment - Java Tokens - Java Virtual Machine (JVM) – Comments – Operators: Types. Java API Packages. Decision making & Looping statements. Arrays- Vectors-Definition- Creation – Methods. String Class – Creation – Methods, String Buffer Class - Creation – Methods. Classes & Objects – creation – static members – this keyword – command line arguments. Inheritance - types – final variables, methods and classes – abstract methods and classes – visibility control. Interfaces – definition – extending interfaces – implementing interfaces. Exception Handling – Types of errors – exception – advantages – basic of exception handling.

Multithreading – Lifecycle of a thread – thread methods. Creating threads – extending Thread Class – implementing Runnable interface.

UNIT-VI : DATA BASE MANAGEMENT AND WEB DESIGNING

Concepts of databases and data modeling - Basic Concepts – Components of DBMS – Table structure – Records, Rows, Tuples, Attributes. Keys: Primary Key, Foreign Key, Composite Key.

MySQL Data Types – Data Definition Commands – Data Manipulation Commands – Data Retrieval Commands.

MySQL Operators and Expressions - Built-in Functions - Indexes and sequences- Views – Joins – Unions - MySQL with PHP. Introduction to Data warehousing and Data mining.

HTML - Basic Tags of HTML - Advanced tags: Links - Lists - Tables – Frames and Forms – CSS: Style Sheet basics - Types of Style Sheets - Formatting Text and Fonts - CSS Class and Attributes.

UNIT-VII : COMPUTER HARDWARE AND NETWORK SECURITY

Motherboard components - Computer peripheral devices – Processors – Chipsets - Bus Standards - Removable Storage and Special Devices - Printers and Scanners - Displays and Graphic Cards – SMPS - BIOS – POST - Upgrading of Systems – Laptop – Troubleshooting - Mobile phone – Basic Components and IC's.

Connecting Input and Output Devices - Connecting Ports - Serial Port (COM Port), Parallel Port (LPT), USB, NIC Port (Network Inter Face Card), Sound Card Ports, Monitor Port – Virus – Anti Virus – Virus/Malware Scanning. Printer Settings – Taking Printouts – Scanning the Image/Document, Adjust the Scan Settings – Web Camera/Digital Camera Settings – Taking Images/Photos – Biometric Device (Thumb Print Scanner, Eye Vision Scanner) – Settings, Taking Images.

Data Communication - Network Types & Networking devices - Transmission Media- - OSI model and Protocols - 802.X Protocols- Wireless & Network protocols - Switching Techniques - TCP/IP - IP Addressing - Network security - Cryptography - Internet Security - Firewalls - Hackers Techniques - Security Mechanism - Wireless Security Issues - Network Security Appliances.

UNIT-VIII : SOFTWARE TESTING

Importance of Testing – Testing Strategies – Verification – Validation – Software Testing Life Cycle – Testing Methods – Types of Testing – Levels of Testing – Functional and Non- Functional Testing – Maintenance – Reverse Engineering – Reusability – test implementation and Execution – Test Reports – Defect Report – Automation Test – Life Cycle of Automation Testing – Automation Frame work – Types of Automation frame Work – Types of Automation Testing Tool – Selecting Right Tool – Different Testing Tools – Selenium – J Unit – SoapUI – Non-Functional Testing Tools – Automation testing Tool selenium – Basics – Writing Test Cases and Test Execution – Executing with Different Browsers.

UNIT - IX: MULTIMEDIA SYSTEMS

Multimedia Systems - Definition – Multimedia elements – Evolving technologies – Data compression – Need – Schemes and Standards – Types of Compression (Concepts only) – Data and File Format Standards – Stages of Multimedia project – Multimedia Skills – Designing and Producing – Designing the structure, Designing the user interface – Producing – Tracking, Copyrights.

Unit – X: ARTIFICIAL INTELLIGENCE & DATA ANALYTICS

Artificial Intelligence – Definition – Types – History – Structure of AI – Goals – Importance – Techniques.

Machine Learning – Strategies – Classes – Applications.

Data Analytics – Data – Types of data – Importance of Data – Data Analysis vs Data Analytics – Types and Elements of Data Analytics.

Python – Data Structures – List, Tuple, Set, Dictionary – Functional Programming (map, filter, reduce, lamda, list comprehension).