

TAMIL NADU PUBLIC SERVICE COMMISSION
SYLLABUS
COMPUTER ENGINEERING / TECHNOLOGY
(DIPLOMA STANDARD)

CODE: 449

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

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 – Basic Memory Management - Virtual Memory - Page Replacement Algorithms - File management - File Access Methods - Linux : Features - Components - Flavors – Linux commands for Managing Accounts.

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 : WEB DESIGNING

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: - JavaScript: Basics- Variables and Data Types - Operators - Control Structures - Objects : Array, History, Location objects - Dialog Boxes - Events and Event Handlers.

UNIT-VI : 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-VII : RDBMS

Concepts of databases and data modeling - Basic Concepts - Data Models- Hierarchical Database Model, Network Database Model and Relational Database Model - CODD's rules- Database Administrator – Normalization - MySQL Operators and Expressions - Built-in Functions - Querying the table - Flow control - Indexes and sequences- Views – Joins – Unions - MySQL Procedures and Functions, Triggers, Cursors - MySQL and Web - MySQL with PHP. Introduction to Data warehousing and Data mining - NOSQL

UNIT-VIII : 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-IX : PYTHON PROGRAMMING

Features of Python – identifiers – reserved keywords – variables – comments. Data types , Type conversion, input function & raw_input function, mutable and immutable objects. Decision making and control statements. Functions – built in functions – mathematical functions, Date and Time, dir(), help() functions, user defined functions- creation. Strings – creation – String functions – escape sequence characters. Lists – Creation – built in list operators and methods. Tuples – creation – basic tuple operations – built in tuple methods. Dictionary – properties - creation – operations – built in dictionary methods. Files – definition – file operations – file object attributes. Directory – methods.

UNIT - X: CLOUD COMPUTING AND IOT

Cloud Components - Essential Characteristics - High-Performance Computing - Web Services - High Scalability Architecture - Benefits, Limitations - Cloud computing services - Cloud Deployment Model - CSA cloud reference model - Brokered Cloud Storage Access - Introduction to internet of things - Physical Design : Things, Protocols – Logical Design: Functional Blocks – IOT communication models & APIs - IOT Enabling Technologies - IOT Levels And Deployment Templates - IOT Design And Methodology - Basic Building Blocks Of An IOT Device.