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FOR PUNJAB CLASS 11 PREPARATION

PSEB 11th Class Syllabus 2027 Computer Science

EXAM	YEAR	TYPE	SUBJECT
Punjab Class 11	2027	Syllabus	Computer Science

COMPUTER SCIENCE
CLASS XI
(Session 2026-27)

Learning Outcomes:

Students should be able to:

a) Develop basic computational thinking using Python
b) Explain and use of data types, operators and control statements and other fundamental topics of Python
c) Ability to understand the issues related to Cyber-Crimes and Safety, E-Waste Management
d) Introduction to IT Act
e) Ability to follow basic cyber ethics
f) Understanding of Various types of Number Systems used by Computer Systems
g) Ability to have understanding of various concepts of Databases
h) Ability to use and work with SQL statements

Unit I

Chapter 1: Number System:

- **Number Systems**: Introduction, Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System

Chapter 5 : Basic Concepts of Database Management System

- **Database concepts**: Introduction to Data, Information, Database and its needs, Traditional File System v/s Database System
- **Data Models**: Introduction, Hierarchical Data Model, Network Data Model, Relational Data Model
- **Introduction to DBMS**: DBMS, Components of DBMS
- **Relational Data Model**: Relation, Attribute, Tuple, Domain, Degree, Cardinality, Keys (Candidate Key, Primary Key, Alternate Key, Foreign Key)
- SQL

Unit II

Chapter 6: Computer System Maintenance:

- **Introduction**: Computer Maintenance and Security
- **Preventive Maintenance**: Basic Guidelines for Preventive Maintenance

- **Booting and Safe Mode Problems**: How to Start Windows in Safe Mode, How to Fix Your PC in Safe Mode-Scan for Malware, Run System Restore, Uninstall Recently Installed Software, Update Hardware Drivers, To check system crashes
- **Installation of Device Drivers**: Download the drivers manually, How to install the driver; Plug and Play Hardware Installation
- **Type of Ports**: Serial Port, Parallel Port, PS/2 Port, Universal Serial Bus (or USB) Port, VGA Port, Power Connector, Modem Port. Ethernet Port. Digital Video Interface, DVI port
- **PC Security Tools**: Importance of PC Security tools
- Software Update and Upgrade
- **Introduction to Windows Operating Systems**: Windows 10, Windows 8.1, Windows 7
- Installation of Python (GUI), IDEs
- **Control Panel:** Display Properties, Mouse and Keyboard, Date and Time, Devices and Printers, Regional Settings, Fonts
- **Utility Programs**: File Compression tools, Disk Defragmentation, Disk Clean-up, Backup and Restore
- **Shutting Down Options**: Switch User, Log Off, Lock Screen, Restart, Sleep, Hibernate, Shut Down or Turn Off

Chapter 7: Cyber Security and Ethics

- **Cyber-Crime**: Definition, Hacking, Spying (Eavesdropping), Phishing and Fraud Emails, Ransomware, Preventing Cyber Crime
- **Cyber Safety**: Safely Browsing the Web, Identity Protection, Confidentiality, Cyber Trolls and Bullying
- **Safely Accessing Web Sites**: Adware, Malware, Viruses, Trojans, Phishing and Identity Verification
- **E-Waste Management**: Proper disposal of used Electronic Gadgets
- **IT Act:** Indian Information Technology Act (IT Act) 2000

Unit-III

Chapter 2: Basic Concepts of Python Programming:

- **Basic concepts for Python Programming**: Python Character Set, Python Tokens (Keyword, Identifier, Literal, Operator, Punctuator), Variables, Concept of L-Value and R-Value, Use of Comments

Chapter 3: Data Types, Operators and Expressions in Python:

- **Data Types**: Number (Integer, Floating Point, Complex), Boolean, Sequence (String, List, Tuple), None, Mapping (Dictionary), Mutable and Immutable Data Types
- **Operators**: Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operator, Augmented Assignment Operators, Identity Operators (is, is not), Membership Operators (in, not in)
- **Expressions, Statement, Type Conversion & Input/Output**: Precedence of Operators, Expression, Evaluation of Expression, Python Statement, Type Conversion (Explicit & Implicit Conversion), Accepting Data as Input from the Console and Displaying Output

Unit IV

Chapter4: Control Statements in Python:

- **Introduction**: Use of Indentation, Sequential Flow, Conditional and Iterative Flow control
- **Conditional Statements:** if, if-else, if-elif-else, Flowcharts, Simple Programs: e.g.: absolute value, largest of 2 and 3 numbers, finding divisibility of numbers etc
- **Iterative Statements:** for loop, Range Function, while loop, Flowcharts, break and continue statements, nested loops, Suggested Programs: Generating Pattern, Summation of series, Finding the Factorial of a positive number etc

Practical Activities

Python Programming

- Input a welcome message and display it.
- Input two numbers and display the larger / smaller number
- Input three numbers and display the largest / smallest number.
- Generate the following patterns using nested loops:

Pattern-1	Pattern-2	Pattern-3
* ** *** **** *****	12345 1234 123 12 1	A AB ABC ABCD ABCDE

- Write a program to input the value of x and n and print the sum of the following series:
  - $1 + x + x^2 + x^3 + x^4 + \cdots x^n$
  - $1 - x + x^2 - x^3 + x^4 - \cdots x^n$
  - $x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + \cdots \frac{x^n}{n}$
  - $x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots \frac{x^n}{n!}$
- Determine whether a number is a perfect number, an Armstrong number or a palindrome.
- Input a number and check if the number is a prime or composite number.
- Display the terms of a Fibonacci series.
- Compute the greatest common divisor and least common multiple of two integers.

Project

- The aim of the class project is to create something that is tangible and useful using Python. This should be done in groups of five to six students and should be started by students at least 3 months before the submission deadline. The aim here is to find a real-world problem that is worthwhile to solve.
- Students are encouraged to solve general and the school level problems, such as-create a calculator for general calculations, create a project to solve mathematical problems like area / perimeter of circle / square / rectangle etc., create a project to calculate the result of a student, create a project to calculate the net bill for sale with discount, create a database to store the student information etc. Students are also encouraged to use comments properly in the programs.
- To do some of these above-mentioned project suggestions, some additional learning is required. This should be encouraged. Students should know how to teach themselves.
- The students should be sensitized to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.