COMPUTER SCIENCE

CLASS XII

Maximum Marks=100
Time: 3 Hrs

Theory =70 Marks
Practical =30 Marks (Internal=10: External=20)

Unit 1: Control Structures in Python.   10 Marks

Conditional Statements:

- ➢ If
- ➢ If-Else
- ➢ If-Elif-else.

Loops: -

- ➢ While Loop
- ➢ For Loop,
- ➢ Finite loop and Infinite Loop,
- ➢ Nested Loop.
- ➢ Break and continue.

Unit 2:-User Defined functions in Python :   10 Marks

- ➢ Concept of a Function
- ➢ creating a function
- ➢ calling a Function
- ➢ Arguments, Arbitrary arguments
- ➢ Scope of a variable (Local and Global)
- ➢ Functions Returning values.

Unit 3: -Introduction to Object Oriented Programming in Python   10 Marks

- ➢ Concept of Object-Oriented Programming
- ➢ Advantages of OOPs
- ➢ Basic elements of OOPs: Class, Object, Encapsulation, Polymorphism, Inheritance, Data abstraction and Data hiding,
- ➢ Access Specifiers (Public, Private, Protected).
- ➢ Constructors: -- Concept of Constructors
- ➢ Types of Constructors (Default and Parameterized constructor).
- ➢ Concept of Destructor.

Unit 4: - Data Structures in Python.   10 Marks

- ➢ Arrays: Concept of Array, creating an array, Access the Elements of an Array, Array Length.
- ➢ Lists- Concept of Lists, Creating a list, List Items (Ordered, Changeable, Allow Duplicates) ,List Length.

- Dictionaries: - Concept of Dictionaries, Creating a dictionary, Dictionaries items:- (Ordered, Changeable, Allow Duplicates) , dictionary Length.
- Tuple: - Concept of Tuple, Creating a Tuple with one item, Tuple items: - (Ordered, Changeable, Allow Duplicates) , Tuple Length.
- Sets: - Concept of Sets, Creating a Set, Sets items: - (Ordered, Changeable, Allow Duplicates) , Set Length.

UNIT 5: Database and SQL   10 Marks

- Database and its advantages
- Relational data model
- Concept of Domain, Relation, Attribute, Tuple, Candidate key, Primary key, Alternate key
- SQL and its advantages
- Data types in SQL (NUMBER, CHAR, DATE)
- Data Definition Language and Data Manipulation Language
- SQL commands: DDL commands (CREATE, DROP, ALTER) , DML commands (SELECT, INSERT, UPDATE, DELETE)
- SQL functions: SUM(), AVG(), COUNT(), MIN(), MAX()

UNIT 6: Boolean Logic   10 Marks

- Boolean Operators: AND, OR, NOT .
- Truth Table
- Basic Logic Gates: AND, OR, NOT, NAND, NOR
- Laws of Boolean Algebra: Commutative law, Associative law, Distributive law, De Morgan's law, Principle of Duality (Proving these laws using Truth Tables only)

UNIT 7: Networking and Cyber security   10 Marks

- Networking and its advantages
- Types of Networks: PAN, LAN, MAN, WAN
- Network Topologies: Bus, Star, Ring
- Modem

Cyber safety and security

- Cyber Bullying: Preventive Measures
- Computer Safety and Security
- Internet Safety and Ethics
- Safe Social Networking
- Safe Email Practices
- Dos and Don'ts for Cyber Safety

PRACTICALS:

Programming in Python

1. WAP to find weather a number is even or odd.
2. WAP to Find greatest among three numbers.
3. WAP to find factorial of a number.
4. WAP to swap two numbers using a user defined function.
5. WAP to find length of a list.
6. WAP to implement concept of multilevel inheritance.
7. WAP to initialize array, display and access its elements.
8. WAP to create a dictionary.
9. WAP create a tuple using one element.
10. WAP to create a set with duplicate values.

SQL Commands:

1. Use SQL command to create a table with specified columns.
2. Use SQL command to insert data into a table.
3. Use SQL command to retrieve data from existing table.
4. Use SQL command to delete records from a table.
5. Use SQL command to drop an existing table.

Practical file

Practical file must contain the entire mentioned practical.

Viva voce

Viva will be asked from syllabus covered

Distribution of 20 marks for External practical

- Programming (Logic, Syntax, Indentation, output) (07 marks)
- SQL commands (03 marks)
- Practical file (05 marks)
- Viva (05 marks)