Unit I

Syllabus : General Problem Solving Concepts : Problem solving in everyday life, types of problems, problem solving with computers, difficulties with problem solving, problem solving aspects, top down design. Problem solving strategies.

Program Design Tools : Algorithms, Flowcharts and Pseudo-codes, implementation of algorithms.

Basics of Python Programming : Features of Python, History and Future of Python, Writing and executing Python program, Literal constants, Variables and identifiers, Data Types, Input operation, Comments, Reserved words, Indentation, Operators and expressions, Expressions in Python.

Unit II

Syllabus :

Decision control statements, Selection/conditional branching statements : if, if-else, nested if, if-elif-else statements. Basic loop Structures/Iterative statements: while loop, for loop, selecting appropriate loop, Nested loops, The break, continue, pass, else statement used with loops. Other data types-Tuples, Lists and Dictionary.

Unit III

Syllabus : Need for functions, Function : definition, call, variable scope and lifetime, the return statement. Defining functions, Lambda or anonymous function, documentation string, good programming practices. Introduction to modules, Introduction to packages in Python, Introduction to standard library modules.

Unit IV

Syllabus : Strings and Operations-concatenation, appending, multiplication and slicing. Strings are immutable, strings formatting operator, built in string methods and functions. Slice operation, ord() and chr() functions, in and not in operators, comparing strings, Iterating strings, the string module.

Unit V

Syllabus : Programming Paradigms-monolithic, procedural, structured and object oriented, Features of Object oriented programming-classes, objects, methods and message passing, inheritance, polymorphism, containership, reusability, delegation, data abstraction and encapsulation. Classes and Objects: classes and objects, class method and self object, class variables and object variables, public and private members, class methods.

Unit VI

Syllabus : Files : Introduction, File path, Types of files, Opening and Closing files, Reading and Writing files. Dictionary method. **Dictionaries :** creating, assessing, adding and updating values. **Case Study :** Study design, features, and use of any recent, popular and efficient system developed using Python. (This topic is to be excluded for theory examination).

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Marking Scheme for University Theory Examination

Unit No	Unit Name	In Semester Exam (30 Marks) Duration 1 Hr	End Semester Exam (70 Marks) Duration. 2 Hr. 30 min.
1	Problem Solving, Programming and Python Programming	15	-
2	Decision Control statements	15	-
3	Functions and Modules	-	18
4	Strings	-	17
5	Object Oriented Programming	-	18
6	File Handling and Dictionaries	-	17
	Total Marks	**30**	**70**

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