C22 Python 50 Assignment & Tutorial Questions (10 per unit)

Unit-I	**Assignment & Tutorial - I**	**10 questions**
Unit-II	**Assignment & Tutorial - II**	**10 questions**
Unit-III	**Assignment & Tutorial - III**	**10 questions**
Unit-IV	**Assignment & Tutorial - IV**	**10 questions**
Unit-V	**Assignment & Tutorial - V**	**10 questions**

Python Assignment & Tutorial - I

Assignment Questions

1. What are the history, key features, and benefits of Python programming language?
2. What is an interactive Python shell? What is the importance of indentation in Python programs?
3. Explain type conversion in Python. Demonstrate explicit type conversion through a Python program.
4. What are various operators in Python and briefly describe them. Summarize precedence and associativity of mathematical operators in Python.
5. List and explain several data types available in Python programming. Explain in detail about primitive data types in Python using examples.

Tutorial Questions

6. What is Program Development Life Cycle? List and explain all the phases of PDLC.
7. Write a brief comparison between a compiler and an interpreter. Explain the process flow of execution of a Python program using an interpreter.
8. Describe Input, Processing, and Output in Python with an example program.
9. What are reserved keywords in Python and explain any 5 keywords with an example? What are identifiers and the rules to create identifiers in Python?
10. What are built-in and external functions in Python? Explain how to use modules in Python.

Python Assignment & Tutorial - II

Assignment Questions

1. Illustrate different types of decision statements used in Python programming.
2. a. Describe various repetition statements in Python with appropriate syntax. Explain how they are executed with the help of flow diagrams.
   b. Write a Python program to generate a Fibonacci series between a range, such as 0-n. [Fibonacci series: 0, 1, 1, 2, 3, 5, 8, 13, …]
3. a. Describe input validation loops and nested loops with appropriate examples.
   b. Write a Python program to print a multiplication table of a given number.
4. What is ‘else’ clause in looping structures in Python? Explain how it works with ‘for’ loop and ‘while’ loop with simple examples.
5. Is string a mutable data type? Describe string slicing using the built-in slicing method and array slicing in detail with an example.

Tutorial Questions:

6. Define and Demonstrate the use of jump statements (break, continue, pass) in Python. Write a program to compute the sum of odd numbers within the given natural number using a continue statement.
7. a. What are string format methods? Explain the string format operator with examples.
   b. How + and * operators work with strings?
8. What are string padding functions in Python? Explain with simple examples.
9. What are the different types of number systems? Write a program to convert a decimal number into binary and octal numbers.
10. How do you encrypt and decrypt strings in Python? Explain them with suitable examples.

Python Assignment & Tutorial - III

Assignment Questions

1. A. Are lists mutable? If yes, what are various Python built-in List methods? Illustrate any 5 methods with examples. (or)
   B. Are dictionaries indexed? If no, explain any 5 built-in Dictionary methods with examples.
2. What is a nested list? Write a program to add two 3-D matrices using lists and print the result.
3. A. Compare a function, a fruitful function, and an anonymous function with an example for each.
   B. What is a lambda function? Describe its characteristics with an example.
4. What are the different types of arguments (or parameter passing) in Python functions? Justify with suitable examples.
5. What are Modules and Packages in Python?
   a. How to import specific attributes from a module into the current Namespace. Illustrate it with an appropriate code.
   b. Briefly describe and illustrate any two packages with an example program.

Additional Q. What are Higher Order Functions? Describe them with examples.

Tutorial Questions:

6. Define and compare the properties of a list, tuple, dictionary, and set.
7. What is list comprehension? Demonstrate it with an example program.
8. How to pass a list into a function? Explain with an example program.
9. What is recursion? Write a program to find the factorial of a given number using recursion.
10. What is PIP? Explain how to install packages using PIP with at least 2 examples.

Python Assignment & Tutorial - IV

Assignment Questions

1. Explain creating classes and instance objects with examples.
2. What is the overview of OOP and explain the advantages and disadvantages of OOP? Demonstrate the abstraction mechanism in Python with an example.
3. What is Inheritance? Describe types of Inheritance with examples.
4. Does Python Support Operator overloading? Justify with an example program.
5. What is Polymorphism? Explain Method overriding and Method overloading with examples.

Tutorial Questions:

6. Demonstrate Data modeling using classes with an example.
7. Demonstrate the usage of super(), issubclass() and isinstance() methods in Python.
8. What are constructor and destructor in classes? Demonstrate them with a program.
9. What are built-in class attributes in Python? Explain adding and retrieving dynamic class attributes.
10. Demonstrate the design of a case study with classes.

Python Assignment & Tutorial - V

Assignment Questions

1. Define any four types of errors and built-in exceptions in Python? Illustrate exception handling with a sample program.
2. How to create, raise and handle user-defined exceptions in Python? Illustrate with a Python program.
3. How can we write a single except block that can handle multiple exceptions and also all kinds of exceptions?
4. What are the different modes of opening a file in Python? Explain the Python ‘open()’ built-in function.
5. Explain file read methods read(), readline(), and readlines() with examples.

Tutorial Questions:

6. Can we implement multiple exception blocks in Python exception handling? Justify your answer.
7. Explain file write methods write() and writelines() with examples.
8. How do you manipulate a file pointer in Python using tell() and seek()? Explain with a sample program
9. Develop a program to read Config files in Python.
10. List and explain any three clean–up actions supported by Python.