GE8151 - PROBLEM SOVING AND PYTHON PROGRAMMING

Question Bank

UNIT 1 - ALGORITHMIC PROBLEM SOLVING

Part-A

1) Define Computer
2) Define algorithm
3) What are the two phases in algorithmic problem solving?
4) Why algorithmic phase is a difficult phase?Justify
5) What are the steps involved in algorithm development process?
6) Compare computer hardware and software.
7) State some properties of an algorithm.
8) What are the three building blocks of an algorithm?
9) Define Input , Output , Assignment statement
10) Describe different notations in algorithm and classify each.
11) Define pseudocode.
12) Define the rules to be followed on pseudocode.
13) Define flowchart.
14) What are the different types of flowcharts?
15) What are the symbols used in flowcharting type?
16) Describe the Data Processing Symbols in Flowchart.
17) List some guidelines for drawing flowchart.
18) List the merits in drawing the flowchart.
19) List the demerits in drawing the flowchart.
20) Explain some of the qualities of Programming Language?
21) What is the difference between the algorithm and the program?
22) Give the pseudocode to check the biggest of 2 numbers.
23) State the differences between Iteration and Recursion.

Part-B

1) Explain in detail about Algorithm (16)
2) What is pseudo code? & how it will be used to solve a problem? (16)
3) Define Flowchart and explain symbols used in flowchart with example (16)
4) Write the Algorithm, pseudo code & draw the flowchart for Towers of Hanoi (16)
5) Develop an Algorithm, Pseudocode & Flowchart for minimum in a list (16)
6) Develop an Algorithm & Pseudo code for Guessing an integer Number (8)
7) Explain with example the building blocks of an algorithm (8)

UNIT 2 – DATA, EXPRESSIONS, STATEMENTS

Part-A

1) What is a program?
2) Define Computer languages.
3) How computer languages are classified.
4) Define assignment statement.
5) List the statements in python.
6) Given the strings x='alpha' and y='beta' print the following string operations.
7) List some of the keywords in python.
8) Define Identifiers in Python
9) What is the comment statement in python?
10) Define variables in python.
11) Explain Input and output statements in python.
12) List the data types in python.
13) What are the operators in Python?
14) Solve the mathematical expression 7/3 * 1.2 +3/2.
15) Define functions in python?
16) Explain the precedence of operators in python.
17) What are the function arguments used in python?
18) List the types of functions.
19) What is the anonymous function in Python?
20) Define modules in Python.
21) How modules are incorporated in a python program?
22) List some of the built-in modules in python
23) Write a simple program to add two numbers in python.
24) Write a simple program to convert KMPH to MPH in python.
25) Write a simple program in python to convert decimal number into binary, octal and hexadecimal number system in python.

Part-B

1) Explain various types of operators used in Python (16)
2) Explain Values & types supported in Python (16)
3) What are the different function prototypes? Explain it with suitable example (16)
4) Explain Interpreter & Interactive mode in Python (8)
5) Write a program to Circulate value of N numbers (8)
6) Explain about various statements in python (8)

UNIT 3 – CONTROL FLOW, FUNCTIONS

Part-A

1) Define Boolean datatype?
2) What are the conditional statements used in python?
3) Define if…else statements in python.
4) Write the syntax for ternary operator in python.
5) Define chained conditionals.
6) Write the syntax for if…elif…else conditionals.
7) Define Iteration.
8) What are the different iterative statements?
9) Define range() function and its syntax.
10) Define while loop.
11) Write the syntax for nested for loops and nested while loop statements.
12) What is python break statement?
13) What is python continue statement.
14) Define fruitful functions in python.
15) What are the types of parameters in functions?
16) What are the various parameter passing techniques?
17) Write the scope of the variable.
18) What is recursive function and its limitations?
19) Write the merits of using functions in a program.
20) Write the syntax for composition.
21) Define strings and name some methods.
22) List some of the methods in List Operations.
23) State the differences between linear search and Binary search.

Part B

1) Explain in detail about Control flow structures (16)
2) Explain Various String functions used in python (16)
3) Write a Python program to compute the factorial of a given number using recursion (8)
4) Write a Python program using while loop first N numbers divisible by 5 (8)
5) Explain the concept of Linear & Binary Search with Python program (16)
6) Discuss Function arguments in Python (16)

UNIT 4 – LISTS, TUPLES, DICTIONARIES

Part A

1) Define List?
2) What is cloning of List?
3) What is aliasing?
4) Define tuple.
5) Explain Tuple Assignment with example.
6) What is slicing?
7) Define Dictionary.
8) Give an example for List comprehension.
9) What is mutability?
10) List the functions of tuple data type.
11) List the methods of list data type.
12) Comment on tuple as return type.
13) When a dictionary is used instead of a list?
14) Differentiate between append() and extend() methods?
15) What is the output of print list + tiny list? List = ['abcd',786,2,23,'john',70.2],tinylist=[123,'john']
16) What is the difference between tuples and lists in python?
17) What is the difference between del() and remove() methods of list?
18) How to merge two dictionaries?
19) Define mutable and immutable data type.
20) When is dictionary used instead of a list?

Part B

1) Explain the following:
   a. List Slicing &List Mutability (6)
   b. List Accessing Methods &List Comprehension (10)
2) Explain Selection & Insertion sort methods with python program (16)
3) Explain Merge & Quick sort methods with python program (16)
4) Explain Dictionary Operation & Methods (16)
5) Write code snippets in Python to perform the following
   a. Accessing Elements of a Tuple (5)
   b. Modifying Elements of a Tuple (5)
   c. Deleting Elements of a Tuple (6)

UNIT 5 - FILES, MODULES, PACKAGES

Part A

1) Define File.
2) List the file opening Modes.
3) List the different ways to read a file.
4) What the difference is between append and write mode?
5) What are the attributes of file objects?
6) List the methods in file objects.
7) Differentiate Errors and Exceptions.
8) Illustrate try-except-else
9) Define modules.
10) Define packages.
11) Define pickling.
12) Give the mechanism to handle exceptions.

Part B

1) What are the two types of files? Explain different file operations (16)
2) How will you create a Package & import it? Explain it with an example program (16)
3) Write a python program to count the number of words in a text file (6)
4) Explain the concept of Exception Handling in Python with suitable program (10)
5) List out the types of Modules and Explain any two types in detail (16)