

ARASU ENGINEERING COLLEGE, KUMBAKONAM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic year 2019-2020 (ODD)

Semester – 01 Question Bank

Regulation 2017

GE8151 - Problem Solving and Python Programming

UNIT 1 - ALGORITHMIC PROBLEM SOLVING

Part-A

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

Part-B

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

UNIT 2 – DATA, EXPRESSIONS, STATEMENTS**Part-A**

- 1) What is a program?
- 2) How computer languages are classified.
- 3) Define assignment statement.
- 4) List the statements in python.
- 5) Given the strings x='alpha' and y='beta' print the following string operations.
- 6) List some of the keywords in python.
- 7) Define Identifiers in Python
- 8) What is the comment statement in python?
- 9) Define variables in python.
- 10) Explain Input and output statements in python.
- 11) List the data types in python.
- 12) What are the operators in Python?
- 13) Solve the mathematical expression $7/3 * 1.2 + 3/2$.
- 14) Define functions in python?
- 15) Explain the precedence of operators in python.
- 16) What is the function arguments used in python?
- 17) List the types of functions.
- 18) What is the anonymous (Lambda) function in Python?
- 19) Define modules and its types in Python.
- 20) Write a simple program to add two numbers in python.
- 21) Build a program 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)
- 7) Construct a program to exchange the values of two variables (8)
- 8) Construct a program to find distance between two points (8)

UNIT 3 – CONTROL FLOW, FUNCTIONS**Part-A**

- 1) Define Boolean data type?
- 2) What are the conditional statements used in python?
- 3) Write the syntax for ternary operator in python.
- 4) Define chained conditionals.
- 5) Write the syntax for if...elif...else conditionals.
- 6) Define Iterative statement and its type.
- 7) Define range () function and its syntax.
- 8) Compare for loop and while loop.
- 9) Write the syntax for nested for loops and nested while loop statements.
- 10) What is python break statement?
- 11) What is python continue statement.
- 12) Define fruitful functions in python.
- 13) What are the types of parameters in functions?
- 14) What are the various parameter passing techniques?
- 15) Write the scope of the variable.
- 16) What is recursive function?
- 17) Write the merits of using functions in a program.
- 18) Write the syntax for composition.
- 19) Define strings and name some methods.
- 20) List some of the methods in List Operations.
- 21) 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 array of 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)
- 7) Construct a program to find square root of a given number. (8)
- 8) Construct a program to find gcd of two numbers. (8)
- 9) Explain the concept of exponentiation with Python program. (8)

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

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)
- 6) Create a program to copy file content from one to another. (8)