GE3151

PROBLEM SOLVING AND PYTHON PROGRAMMING

Anna University Questions

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 41516

B.E./B.Tech. DEGREE EXAMINATIONS, JANUARY 2022.

First Semester

Civil Engineering

GE 3151 – PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to All Branches)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write an algorithm to accept two numbers, compute the sum and print the result.

2. Define an iterative statement.

3. Are comments executable statements in a Python program? How comments are included in a Python program?

4. Identify the operand (s) and operator (s) in the following expression:
$sum = a + b$.

5. Name the two types of iterative statements supported by Python.

6. Define a recursive function.

7. In Python, how the values stored in a list are accessed? Should the elements of a list be of the same data type?

8. How Python's dictionaries store data? Give example.

9. Write the syntax for opening a file to write in binary mode.

10. What are the different modules in Python?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw a flow chart to accept three distinct numbers, find the greatest and print the result. (8)

(ii) Draw a flow chart to find the sum of the series

1 + 2 + 3 + 4 + 5 +....+ 100. (8)

Or

(b) State the Towers of Hanoi problem. Outline a solution to the Towers of Hanoi problem with relevant diagrams. (16)

12. (a) Outline the data types supported by Python with an example. (16)

Or

(b) Name the types of operators supported by Python and outline any two with an example. (16)

13. (a) Outline the conditional branching statements in Python with an example. (16)

Or

(b) (i) Outline while loop, break statement and continue statement in Python with an example. (12)

(ii) Write a Python program using function to find the sum of first 'n' odd numbers and print the result. (4)

14. (a) Name the operations that can be performed on a list and outline any four with an example. (16)

Or

(b) (i) Write separate Python programs to illustrate create, access, concatenate and delete operations in a tuple. (10)

(ii) Write a Python program to create a dictionary and sort the content based on values in reverse order. (6)

15. (a) Name the different access modes for opening a file and present an outline of the same. (16)

Or

(b) (i) What is an exception? Elaborate exception handling in Python. (8)

(ii) Write a program to concatenate the contents of two files into a single file. Get the input for two files from the user and concatenate it. (8)

Question Paper Code : 60035

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

First Semester

Civil Engineering

GE 3151 – PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to : All Branches)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write an algorithm to find smallest among three numbers.
2. Which is better iteration or recursion? Justify your answer.
3. List any four built in data types in Python.
4. How do you assign a value to a tuple in Python?
5. What are the purposes of pass statement in Python?
6. What is Linear Search?
7. Give examples for mutable and immutable objects.
8. What is purpose of dictionary in Python?
9. List any four file operations.
10. Write a python program to Count Words in a sentence using spilt () function.

PART B — (5 × 16 = 80 marks)

11. (a) List out the control flow statements in Python and explain repetition type in detail with a sample program.

Or

(b) What is recursion? Write and explain a Python program to find factorial of number using recursion.

12. (a) Why do we call python as interpreted and object-oriented programming language? Also explain about Interactive Python.

Or

(b) Write and explain the python program to swap two numbers with and without temporary variables.

13. (a) What is difference between break and continue in Python? Explain with suitable examples.

Or

(b) What is string function in Python? Explain any three Python string methods with an example.

14. (a) Define Python Lists. How to add elements to the list? Explain with a suitable example program.

Or

(b) Explain bubble sort algorithm using python programming.

15. (a) Why does Python require file handling? Explain opening files in python with all modes.

Or

(b) Give a brief notes on Python Exception Handling using try, except, raise and finally statements.

Question Paper Code : 80173

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

First Semester

Civil Engineering

GE 8151 — PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to all Branches)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the symbols used in drawing the flowchart.
2. Give the Python code to find the minimum among the list of 10 numbers.
3. Outline the logic to swap the contents of two identifiers without using third variable.
4. State about Logical operators available in python language with example.
5. Comment with an example on the use of local and global variable with the same identifier name.
6. Define recursive function.
7. How to create a list in python? Illustrate the use of negative indexing of list with example.
8. Demonstrate with simple code to draw the histogram in python.
9. Categorise the different types of errors arises during programming. Interpret the following python code

```
>>> import os
>>> cwd = os.getcwd( )
>>> print cwd
/home/dinsdale
```

10. What is command line argument?

PART B — (5 × 16 = 80 marks)

11. (a) Mention the different types of iterative structure allowed in Python. Explain the use of continue and break statements with an example. (16)

Or

(b) (i) What is an algorithm? Summarise the characteristics of a good algorithm. (8)

(ii) Outline the algorithm for displaying the first n odd numbers. (8)

12. (a) Describe about the concept of precedence and associativity of operators with example. (16)

Or

(b) (i) Mention the list of keywords available in Python. Compare it with variable name. (8)

(ii) What are statements? How are they constructed from variable and expressions in Python? (8)

13. (a) (i) Analyse string slicing. Illustrate how it is done in Python with example. (8)

(ii) Write a Python code to search a string in the given list. (8)

Or

(b) (i) Outline about function definition and call with example. (10)

(ii) Why are functions needed? (6)

14. (a) Demonstrate with code the various operations that can be performed on tuples. (16)

Or

(b) Outline the algorithm and write a Python program to sort the numbers in ascending order using merge sort. (16)

15. (a) Explain about the file reading and writing operations using format operator with Python code. (16)

Or

(b) (i) Explain about how exceptions are handled with example. (8)

(ii) Design a Python code to count the number of words in a Python file. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 90277

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

First Semester

Civil Engineering

GE 8151 – PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to all Branches)

(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A (10×2=20 Marks)

1. How will you analyse the efficiency of an algorithm ?
2. What is the use of Algorithm, Flowchart and Pseudo code in the perspective of problem solving ?
3. Compare interpreter and compiler. What type of translator is used for Python ?
4. Write a python program to print sum of cubes of the values of n variables.
5. Do Loop statements have else clause ? When will it be executed ?
6. Write a program to display a set of strings using range() function.
7. How will you update list items ? Give one example.
8. Can functions return tuples ? If yes give example
9. How to use command line arguments in python ?
10. Write methods to rename and delete files.

PART – B (5×16=80 Marks)

11. a) i) What is a Programming Language ? What are its types ? Explain them in detail with their advantages and disadvantages. (8)

ii) Write a function find_index(), which returns the index of a number in the Fibonacci sequence, if the number is an element of this sequence and returns-1 if the number is not contained in it, call this function using user input and display the result (8)

(OR)

b) i) What is recursive function ? What are its advantages and disadvantages ? Compare it with iterative function. (6)

ii) Implement a recursive function in Python for the sieve of Eratosthenes. The sieve of Eratosthenes is a simple algorithm for finding all prime numbers up to a specified integer. It was created by the ancient Greek mathematician Eratosthenes. The algorithm to find all the prime numbers less than or equal to a given integer n: (10)

1) Create a list of integers from two to n: 2, 3, 4,....., n.

2) Start with a counter i set to 2, i.e. the first prime number.

3) Starting from i + i, count up by i and remove those numbers from the list, i.e. 2*i, 3*i, 4*i,...

4) Find the first number of the list following i. This is the next prime number.

5) Set i to the number found in the previous step.

6) Repeat steps 3 and 4 until i is greater than n. (As an improvement: It's enough to go to the square root of n)

7) All the numbers, which are still in the list, are prime numbers.

12. a) i) Write a python program to rotate a list by right n times with and without slicing technique. (4+4)

ii) Discuss about keyword arguments and default arguments in python with example. (4+4)

(OR)

b) i) Write a python program print the maximum among 'n' randomly generate 'd' numbers by storing them in a list. (10)

ii) Evaluate the following expressions in python. (6)

i) 24//6%3

ii) float(4+int(2.39)%2)

iii) 2**2**3

13. a) i) If you are given three sticks, you may or may not be able to arrange them in a triangle. For example, if one of the sticks is 12 inches long and the other two are one inch long, you will not be able to get the short sticks to meet in the middle. For any three lengths, there is a simple test to see if it is possible to form a triangle: If any of the three lengths is greater than the sum of the other two, then you cannot form a triangle. Otherwise, you can.

i) Write a function named is – triangle that takes three integers as arguments, and that prints either "Yes" or "No", depending on whether you can or cannot form a triangle from sticks with the given lengths. (4)

ii) Write a function that prompts the user to input three stick lengths, converts them to integers, and uses is_triangle to check whether sticks with the given lengths can form a triangle. (4)

ii) Write a python program to generate all permutations of a given string using built-in function. (8)

(OR)

b) i) Compare lists and array with example. Can list be considered as an array ? Justify. (6)

ii) Write a python function are Anagram1 () to check whether two strings are anagram of each other or not with built-in string function and are Anagram2() to check the anagram without using built-in string function. (10)

14. a) i) Define Dictionary in Python. Do the following operations on dictionaries. (10)

i) Initialize two dictionaries with key and value pairs.

ii) Compare the two dictionaries with master key list and print missing keys.

iii) Find keys that are in first and not in second dictionary.

iv) Find same keys in two dictionaries.

v) Merge two dictionaries and create a new dictionary using a single expression.

ii) What is list comprehension in python ? Explain with example. (6)

(OR)

b) i) What is tuple in python ? How does it differ from list ? (8)

ii) Write a python program to sort n numbers using mergesort. (8)

15. a) i) What are exceptions ? Explain the method to handle them with example. (8)

ii) Write a python program to count the number of words in a text file. (8)

(OR)

b) i) How to Merge multiple files in to a new file using python. (6)

ii) What are modules in python ? How will you import them ? Explain the concept by creating and importing a module. (10)

Question Paper Code : 25109

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER/JANUARY 2019.

First Semester

Civil Engineering

GE 8151 — PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to all Branches)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between algorithm and program.

2. Write an algorithm to find the minimum number in a given list of numbers.

3. What are keywords? Give examples.

4. State the reasons to divide programs into functions.

5. Present the flow of execution for a while statement.

6. Define recursion with an example.

7. Relate strings and lists.

8. Give a function that can take a value and return the first key mapping to that value in a dictionary.

9. What is a module? Give example.

10. Find the syntax error in the code given :

while True print ('Hello world')

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss about the building blocks of algorithms. (8)

(ii) Write a recursive algorithm to solve towers of Hanoi problem. (8)

Or

(b) (i) Identify the simple strategies for developing an algorithm. (8)

(ii) Write an algorithm to insert a card into a list of sorted cards. (8)

12. (a) (i) Sketch the structures of interpreter and compiler. Detail the differences between them. Explain how python works in interactive mode and script mode with examples. (2 + 2 + 4)

(ii) Summarize the precedence of mathematical operators in python. (8)

Or

(b) (i) Explain the syntax and structure of user defined functions in Python with examples. Also discuss about parameter passing in functions. (12)

(ii) Write a python function to swap the values of two variables. (4)

13. (a) List the three types of conditional statements and explain them. (16)

Or

(b) (i) Python strings are immutable. Justify with an example. (8)

(ii) Write a python code to perform binary search. Trace it with an example of your choice. (8)

14. (a) (i) Discuss the different options to traverse a list. (8)

(ii) Demonstrate the working of +, * and slice operators in python. (8)

Or

(b) (i) Compare and contrast tuples and lists in Python. (4)

(ii) Write a script in Python to sort n numbers using selection sort. (12)

15. (a) (i) Explain the commands used to read and write into a file with examples. (8)

(ii) Discuss about the use of format operator in file processing. (8)

Or

(b) Describe how exceptions are handled in Python with necessary examples. (16)

Question Paper Code : 54009

B.E./B.Tech. DEGREE EXAMINATION, JANUARY 2018
First Semester
Civil Engineering
GE 8151 – PROBLEM SOLVING AND PYTHON PROGRAMMING
(Common to All Branches)
(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. What is an algorithm ?
2. Write an algorithm to accept two numbers, compute the sum and print the result.
3. Name the four types of scalar objects Python has.
4. What is a tuple ? How literals of type tuple are written ? Give example.
5. Write a Python program to accept two numbers, multiply them and print the result.
6. Write a Python program to accept two numbers, find the greatest and print the result.
7. What is a list ? How lists differ from tuples ?
8. How to slice a list in Python ?
9. Write a Python script to display the current date and time.
10. Write a note on modular design.

PART – B **(5×16=80 Marks)**

11. a) i) Draw a flow chart to accept three distinct numbers, find the greatest and print the result. **(8)**

ii) Draw a flow chart to find the sum of the series 1 + 2 + 3 + 4 + 5 + ...+ 100. **(8)**

(OR)

b) Outline the Towers of Hanoi problem. Suggest a solution to the Towers of Hanoi problem with relevant diagrams. **(16)**

12. a) i) What is a numeric literal ? Give examples. **(4)**

ii) Appraise the arithmetic operators in Python with an example. **(12)**

(OR)

b) i) Outline the operator precedence of arithmetic operators in Python. **(6)**

ii) Write a Python program to exchange the value of two variables. **(4)**

iii) Write a Python program using function to find the sum of first 'n' even numbers and print the result. **(6)**

13. a) i) Appraise with an example nested if and elif header in Python. **(6)**

ii) Explain with an example while loop, break statement and continue statement in Python. **(10)**

(OR)

b) i) Write a Python program to find the factorial of a given number without recursion and with recursion. **(8)**

ii) Write a Python program to generate first 'N' Fibonacci numbers. **(8)**

Note : The Fibonacci numbers are 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ... where each number is the sum of the preceding two.

14. a) i) What is a dictionary in Python ? Give example. **(4)**

ii) Appraise the operations for dynamically manipulating dictionaries. **(12)**

(OR)

b) i) Write a Python program to perform linear search on a list. **(8)**

ii) Write a Python program to store 'n' numbers in a list and sort the list using selection sort. **(8)**

15. a) Tabulate the different modes for opening a file and explain the same. **(16)**

(OR)

b) i) Appraise the use of try block and except block in Python with syntax. **(6)**

ii) Explain with an example exceptions with arguments in Python. **(10)**

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : GE8151

B.E./B.Tech. DEGREE EXAMINATION, 2017

First Semester

Civil Engineering

GE8151 - PROBLEM SOLVING AND PYTHON PROGRAMMING

(Common to All Branches)

(Regulations 2017)

Time : Three Hours Maximum : 100 Marks

Answer ALL questions

PART – A**(10×2=20**

Marks)

1. What is an algorithm ?
2. Write a pseudo-code to accept two numbers, add the numbers and print the result.
3. Outline the modes Python interpreter works.
4. State the difference between (I) and (II) operators in Python.
5. Write a Python program to accept two numbers, find the greatest and print the result.
6. What is recursion ?
7. What is a list in Python ? Give example.
8. Write the syntax for concatenating two lists in Python.
9. What is an exception ? Give example.
10. Write the syntax for opening a file in Python for reading only.

PART – B**(5×16=80 Marks)**

11. a) i) Explain with an example the boilding blocks of an algorithm. **(8)**

ii) Draw a flow chart to print the first 'n' prime numbers. **(8)**

(OR)

b) Explain with relevant diagrams and algorithm the Towers of Hanoi problem. **(16)**

12. a i) Explain with an example the structure of a Python program. **(8)**

ii) Outline with an example the assignment operators supported in Python. **(8)**

(OR)

b) Explain the various data types in Python. **(16)**

13. a) i) Write a Python program using while loop to print the first n numbers divisible by 5. **(8)**

ii) Write a Python program to compute the factorial of a given number. **(8)**

(OR)

b) Write Python program to perform binary search. **(16)**

14. a) Write code snippets in Python to perform the following :

i) Accessing elements of a tuple. **(5)**

ii) Modifying elements of a tuple. **(5)**

iii) Deleting elements of a tuple. **(6)**

(OR)

b) Write the Python program to sort an integer list using selection sort. **(16)**

15. a) Describe in detail how exceptions are handled in Python. Give relevant examples. **(16)**

(OR)

b) Write a Python program to copy the contents of one file to another. **(16)**

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