

| Guru Nanak Dev Engineering College, Ludhiana | | | |
|--|-------------|-----------------------|--------------------|
| Department of Information Technology | | | |
| Program | B.Tech.(IT) | Semester | 4 |
| Subject Code | PCIT-105 | Subject Title | Python Programming |
| Mid Semester Test (MST) No. | 1 | Course Coordinator(s) | Harpreet Kaur |
| Max. Marks | 24 | Time Duration | 1 hour 30 minutes |
| Date of MST | 20/3/2022 | Roll Number | |

Note: Attempt all questions

| Q. No. | Question | COs, RBT level | Marks |
|--------|--|-------------------|--------|
| Q1 | What is platform independence in python? | CO1, L1 | 2 |
| Q2 | What are the Mutable data types in python? | CO2, L2 | 2 |
| Q3 | Write a program to explain the concept of isdecimal(), isdigit() and isnumeric() string function. | CO3, L3 | 4 |
| Q4 | Write a program to accept a number from a user and calculate the product of all the digits of the given number. (e.g. if n=56, Output= 30) | CO2, L4 | 4 |
| Q5 | Why Python is becoming popular day by day? Compare it with other programming languages. | CO4, L5 | 4 |
| Q6 | 1) Write short note on Operator Precedence vs. Operator Associativity 2) How to Read and Write into a Text file in Python | CO3, L6 | 8(4+4) |

Course Outcomes (CO)

Students will be able to

| | |
|---|--|
| 1 | Use primitive data types, operators and control statements to write programs |
| 2 | Discuss methods and arrays along-with basic object oriented principles. |
| 3 | Implement Exception handling, multithreading, string handling, event handling, packages and interfaces |
| 4 | Create an event handling techniques for interaction of the user with a GUI. |
| 5 | Design client/server applications using socket programming and database connectivity. |
| 6 | Identify and solve complex problems in the environment of Java programming. |

| RBT Classification | Lower Order Thinking Levels (LOTS) | | | Higher Order Thinking Levels (HOTS) | | |
|--------------------|------------------------------------|---------------|----------|-------------------------------------|------------|----------|
| RBT Level Number | L1 | L2 | L3 | L4 | L5 | L6 |
| RBT Level Name | Remembering | Understanding | Applying | Analyzing | Evaluating | Creating |

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| Q. No. | Question | COs, RBT level | Marks |
| Q1 | What is platform independence in python? | CO1, L1 | 2 |
| Q2 | What are the immutable data types in python? | CO2, L2 | 2 |
| Q3 | Write a program to explain the concept of index() and find() string function. | CO3, L3 | 4 |
| Q4 | Write a program to accept a number from a user and calculate the sum of all numbers from 1 to the given number. | CO2, L4 | 4 |
| Q5 | Why Python is becoming popular day by day? Compare it with other programming languages. | CO4, L5 | 4 |
| Q6 | 1) Write short note on Operator Precedence vs. Operator Associativity 2) How to Read and Write into a Text files in Python | CO3, L6 | 8(4+4) |
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|--|-------------|------------------------------|--------------------|
| Program | B.Tech.(IT) | Semester | 4 |
| Subject Code | PCIT-105 | Subject Title | Python Programming |
| Mid Semester Test (MST) No. | 2 | Course Coordinator(s) | Harpreet Kaur |
| Max. Marks | 24 | Time Duration | 1 hour 30 minutes |
| Date of MST | 20/3/2022 | Roll Number | |

Note: Attempt all questions

| Q. No. | Question | COs, RBT level | Marks |
|---------------|--|---------------------------|--------------|
| Q1 | What is difference between count() and length() function in List? | CO1, L1 | 2 |
| Q2 | Output? List = ['a', 'b', 'c', 'd', 'D'] List.sort(reverse=True) print(List) | CO2, L2 | 2 |
| Q3 | Write a program to find LCM of two numbers using function. | CO3, L3 | 4 |
| Q4 | Write a program using function to multiply all the numbers in a list. <i>Sample List : [8, 2, 3, -1, 7] Expected Output : -336</i> | CO2, L4 | 4 |
| Q5 | Write short note on following with suitable syntax: a) Constructor in Python b) Multilevel inheritance | CO4, L5 | 4 |
| Q6 | Design GUI using Tkinter to order a Pizza from Domino's. Choose data and widgets accordingly. | CO3, L6 | 8 |

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Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 4

Name of Subject: Python Programming

Subject Code: PCIT-105

Paper ID: 16234.

MORNING

16 JUN 2023

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part C has Two Questions Q8 and Q9. Both are compulsory but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) What are the advantages of using Python as a programming language?
- b) What is the purpose of setting up path and environment variables for Python?
- c) Explain the difference between a string and a numeric data type in Python.
- d) How can syntax errors be detected and corrected in Python?
- e) What is the purpose of a command button in a graphical user interface (GUI)?
- f) What is the difference between a class and an object in Python?

Part – B

[Marks: 04 each]

- Q2.** Elaborate on the difference between a list and a dictionary in Python. Discuss their respective characteristics, use cases, and how they are accessed and manipulated in Python.
- Q3.** Write a Python code to calculate income tax based on the user's input.
- Q4.** What are the different types of loops and selection statements available in Python?
- Q5.** Write a Python program to approximate the square root of a given number using a while loop.

- Q6. Explain the concept of recursive functions in Python and provide an example that demonstrates their usage. Discuss the key elements required for designing recursive functions and highlight the importance of defining base cases.
- Q7. How to analyze a given text file and perform a text analysis using Python.

Part - C**[Marks: 12 each]**

- Q8. Discuss the importance and applications of loops and selection statements in programming. Explain the differences between definite iteration and conditional iteration using suitable examples. Furthermore, explain how loops and selection statements can be used in conjunction with strings and text file manipulation, highlighting their significance in real-world scenarios. Provide code snippets to support your explanations.

OR

Imagine you are designing a task management application in Python. Discuss the design considerations and implementation strategies for efficiently storing and managing tasks using lists, dictionaries, functions, and classes. Explain how you would design and implement a function that adds new tasks to the task list, a function that sorts and displays tasks based on priority, and a class that represents a task with various attributes and methods. Provide code snippets and examples to support your explanations.

- Q9. Design a graphical user interface (GUI) program in Python that allows users to input a series of numbers and calculate their average. The program should include windows, input fields, and buttons for user interaction. Discuss the steps involved in designing and implementing this GUI program, including the use of instance variables, event handling, and data validation. Provide a detailed explanation of the code and highlight the key features and functionalities of the program.

OR

Design a program in Python to accomplish the following tasks:

- i. Read a text file containing a paragraph of text.
- ii. Implement a loop to iterate over each word in the paragraph to count the occurrences of each unique word and store the word count in a dictionary.
- iii. Use selection statements to filter out common words and exclude them from the word count.
- iv. Write the updated word count dictionary to a new text file, with each word and its count on a separate line.

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Time Allowed: 03 Hours

EVENING

Max. Marks: 60

12 JAN 2023

NOTE:

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- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
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Part – A

[Marks: 02 each]

Q1.

- a) Suppose your script attempts to print the value of a variable that has not yet been assigned a value. How does the Python interpreter react?
- b) Discuss four string manipulation methods.
- c) In Python, what is the distinction between a list and a tuple?
- d) In what way is a recursive design different from a top-down design?
- e) What is object instantiation? What are the options at the programmer's disposal during this process?
- f) Describe two fundamental differences between terminal-based user interfaces and GUIs.

Part – B

[Marks: 04 each]

- Q2.** Assume that the variable data refers to the list [5, 3, 7]. Write the values of the following expressions:

| | | | | | |
|-------------|--------------|---------------|---------------|--------------|----------------------|
| a. data [2] | b. data [-1] | c. len (data) | d. data [0:2] | e. 0 in data | f. data + [2, 10, 5] |
|-------------|--------------|---------------|---------------|--------------|----------------------|

- Q3.** Write a while loop in python that computes the factorial of a given integer N.

- Q4.** A student complains that defining functions to use in his programs is a lot of extra work. He says he can finish her programs much more quickly if he just writes them using the basic operators and control statements. State three reasons why his views is shortsighted.

- Q5. Why is it a good idea to write and test the code for laying out a window's components before you add the methods that perform computations in response to events.
- Q6. Class B extends class A. Class B defines an `__str__` method that returns the string representation of its instance variables. Class B defines a single instance variable named `age`, which is an integer. Write the code to define the `__str__` method for class B. This method should return the combined string information from both classes. Label the data for `age` with the string "Age: ".
- Q7. What are the different ways to generate random numbers in Python? With Example

Part – C

[Marks: 12 each]

- Q8. Elaborate various operators available in Python with proper code. **EVENING**

OR

12 JAN 2023

Write a GUI-based program that allows the user to convert temperature values between degrees Fahrenheit and degrees Celsius. The interface should have labelled entry fields for these two values. These components should be arranged in a grid where the labels occupy the first row and the corresponding fields occupy the second row. At start-up, the Fahrenheit field should contain 32.0, and the Celsius field should contain 0.0. The third row in the window contains two command buttons, labeled >>>> and <<<<. When the user presses the first button, the program should use the data in the Fahrenheit field to compute the Celsius value, which should then be output to the Celsius field. The second button should perform the inverse function.

- Q9. Write a script named `dif.py`. This script should prompt the user for the names of two text files and compare the contents of the two files to see if they are the same. If they are, the script should simply output "Yes". If they are not, the script should output "No", followed by the first lines of each file that differ from each other. The input loop should read and compare lines from each file. The loop should break as soon as a pair of different lines is found.

OR

Define and test a function `myRange`. This function should behave like Python's standard `range` function, with the required and optional arguments, but it should return a list. Do not use the `range` function in your implementation

[Total No. of Questions: 09]

Uni. Roll No.

[Total No. of Pages: 02]

Program: B.Tech. (Batch 2018 onward)

Semester: 04

Name of Subject: Python Programming

Subject Code: PCIT-105

Paper ID: 16234

Scientific calculator is NotAllowed

Detail of allowed codes/charts/tables etc. NIL

Max. Marks: 60

Time Allowed: 03 Hours

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
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Part – A

[Marks: 02 each]

Q1.

- a) What are the features of python?
- b) Write a Python program that prints (displays) your name, address, and telephone number.
- c) Explain the relationship between a function and its arguments.
- d) What happens when the print function prints a string literal with embedded newline characters?
- e) How can you open a file in python?
- f) When would you make a data field read-only, and how would you do this?

Part – B

[Marks: 04 each]

- Q2. With a suitable program, elaborate compilation and linking process in python.
- Q3. Write a program to print the multiplication table of a given number entered by the user.
- Q4. Write a program to accept a number from 1 to 12 and display the name of the month and days in that month like 1 for January and the number of days 31 and so on.
- Q5. Write a Python program to search a specific part of a string for a substring.
- Q6. What roles do the parameters and the return statement play in a function definition?

- Q7. What are the benefits of inheritance? Create a child class ***Bus*** that will inherit all of the variables and methods of the ***Vehicle*** class.

Part - C

[Marks: 12 each]

- Q8. Elaborate the concept of Dictionaries in python. How will you add and access elements to a Dictionary? Write a Python program to concatenate the following dictionaries to create a new one.

Sample Dictionary :

```
dic1={1:10, 2:20}  
dic2={3:30, 4:40}  
dic3={5:50,6:60}
```

Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

OR

What is meant by the state of an object, and how does the programmer access and manipulate it? Explain the differences between instance variables and temporary variables. Focus on their visibility in a class definition, and on their roles in managing data for an object of that class.

- Q9. Write a Python program that accepts a string and calculate the number of digits and letters.

Sample Data: Python 3.2

Expected Output :

Letters 6

Digits 2

OR

Define what is a class? How to create a class? Define what is a method, how to do object instantiation? Describe how to create instance attributes in Python. Also elaborate structure of basic python program.

MORNING
21 SEP 2022

Please check that this question paper contains _____ questions and _____ printed pages within first ten minutes.

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Program: B.Tech. (Batch 2018 onward)
Semester: 4
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Time Allowed: 03 Hours

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Part – A

[Marks: 02 each]

Q1.

- a) What is slicing in Python? Explain with example.
- b) Why is the “pass” keyword used for in Python?
- c) What are iterators in Python?
- d) How do you write comments in python?
- e) What is the scope of a variable? Give an example.
- f) Why do we use join() function in Python?

Part – B

[Marks: 04 each]

- Q2. What is the difference between list and tuple?
- Q3. How are classes created in Python? Explain with coding example.
- Q4. Describe the costs and benefits of defining and using a recursive function.
- Q5. What is the usage of help() and dir() function in Python? Give progarming example.
- Q6. Assume that a file contains integers separated by newlines. Write a code segment that opens the file and prints the average value of the integers.
- Q7. Write a program that computes and prints the average of the numbers in a text file.
You should make use of two higher-order functions to simplify the design.

Part – C**[Marks: 12 each]**

- Q8.** Describe the basic phases of software development : analysis, design, coding, and testing with example.

OR

Explain the Loops and Selection Statements used in Python with coding examples.

- Q9.** Write a Python program using classes and objects to simulate result preparation system for 20 students. The data available for each student includes: Name, Rollno, and Marks in 3 subjects. The percentage marks and grade are to be calculated from the following information:

| Marks Percentage | Grade |
|------------------|-------|
| 80 to 100 | A |
| 60 to 80 | B |
| 45 to 60 | C |
| Less than 45 | D |

OR

Write a program that allows the user to obtain information about the file system. You must follow the software development process.
