

Course Code: AI115AI
Semester : I Semester
Duration : 90 Minutes

Date: 21/11/2023

Maximum Marks: 50

Introduction to Python Programming CIE 1

Note: Answer all the Questions

| SL. No | Questions | M | BT | CO |
|--------|---|---|----|----|
| 1 | a) Describe any 3 key features and any 2 applications of Python Programming Language? | 5 | 2 | 1 |
| | b) Illustrate with syntax and example the types of typecasting in Python? | 5 | 3 | 2 |
| 2 | a) Discuss with example any 5 string handling functions available in Python? | 5 | 2 | 2 |
| | b) Explain the guidelines to declare the variable in Python? | 5 | 2 | 1 |
| 3 | a) Explain the uses of nested if with example. | 5 | 2 | 1 |
| | b) Write a program to find whether the given character is oval or not using branching statement? (Your program should read the input from the user infinite number of times and it should terminate when the user enter "EXIT") | 5 | 3 | 3 |
| 4 | a) Demonstrate Membership operators in Python | 5 | 2 | 1 |
| | b) Illustrate the use of any 5 Comparison operator in Python | 5 | 3 | 1 |
| 5 | a) Write a program to find duplicate word in the given paragraph if found replace it by "RVCE" string? (Eg: input str1= "abc def hij abcd" output str1= "RVCE def hij RVCEd") | 5 | 3 | 3 |
| | b) Write a program to find the Golden Ratio. | 5 | 2 | 2 |

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Introduction to Python Programming CIE 2

Note: Answer all the Questions

| Q. No | Questions | M | BT | CO |
|-------|--|---|-----|----|
| 1 | a) Explain break, continue and pass control statements in python with example. | 5 | 2 | 1 |
| | b) Write the output of following statements with explanation i) for i in range(5): print(i) ii) for i in range(10, 20): print(i*2) iii) for i in range(30, 50, 5): print(i) | 5 | 3 | 2 |
| 2 | a) Define tuple. Illustrate with syntax and example count() and index() inbuilt methods supported by tuples. | 5 | 1,3 | 2 |
| | b) Given the string "Accountability", apply the suitable inbuilt method to do the following operations and write proper python statements and their respective outputs. i) Check whether the string is in title case or not ii) Extract the substring 'ability' using negative indexing iii) Check whether the string ends with 'ab' or 'ty' | 5 | 3 | 2 |
| 3 | a) Consider the given list as list1 = ["Jan", "Feb", "April", "May"]. Write a program to do the following operations using suitable inbuilt methods of lists (i) Adding an element "June" at end of existing list (ii) Adding element "March" after "Feb" in the list (iii) Extend the list by adding next 3 months names as an entire list to existing list. | 5 | 3 | 3 |
| | b) Compare and contrast all the mutable data types in python. | 5 | 2 | 2 |
| 4 | a) Explain the need and benefits of using functions. Differentiate between built in function and user defined functions. | 5 | 2 | 1 |
| | b) Write the python program to find the sum of odd numbers in the specified range of integer numbers using user defined functions. The start and end value of range has to be read as an input from the user and pass them as an argument to the function. The function should include checking for odd number and computing the sum. | 5 | 3 | 3 |
| 5 | a) Illustrate the scope and use of global variables and local variables with suitable example. | 5 | 3 | 2 |
| | b) Write a program to create a dictionary with whole integer numbers as values of dictionary and fetch only even values from a given dictionary using for loop. | 5 | 3 | 3 |

Department of Artificial Intelligence and Machine Learning

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Introduction to Python Programming Improvement Test

Note: Answer all the Questions

| Q. No | Questions | M | BT | CO |
|-------|---|---|----|-----|
| 1 | a) What is a file? Explain the key parameters for working with Python open() function | 5 | L1 | CO1 |
| | b) Explain any 5 modes of opening a file in Python | 5 | L2 | CO1 |
| 2 | a) Describe the following file functions rstrip(), close(), read(), readline(), write() | 5 | L2 | CO1 |
| | b) Write a program to count the number of characters, words and lines in a text file | 5 | L3 | CO3 |
| 3 | a) Describe Error and exceptions, their differences in Python | 5 | L2 | CO1 |
| | b) Demonstrate a Python program to handle error using any 2 exception clause. | 5 | L3 | CO3 |
| 4 | a) Illustrate the difference between finally and except in Python | 5 | L3 | CO2 |
| | b) Define the following Object Oriented concepts in Python – Class, Object, attributes and method | 5 | L2 | CO1 |
| 5 | a) Justify encapsulation in Python with an example | 5 | L3 | CO1 |
| | b) Illustrate access modifiers in Python with snippet code | 5 | L3 | CO3 |

INTRODUCTION TO PYTHON PROGRAMMING (ELECTIVE)

Time: 03 Hours

Maximum Marks: 100

Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer SIX full questions from Part B. In Part B question numbers 2 and 11 are compulsory. Answer any one full question from 3 and 4, 5 and 6, 7 and 8 & 9 and 10. Question number 11 is lab component (compulsory).

PART-A

| | | | |
|---|------|---|----|
| 1 | 1.1 | What will be the output of the following code? <code>print(print(print("Python SEE")))</code> | 01 |
| | 1.2 | Give one difference between local and global variables in python. | 01 |
| | 1.3 | What will be the output for the following code? <code>abc = 10 x = abc += 2 print(x)</code> | 01 |
| | 1.4 | What will be the output for the statement? <code>print(type(0xFF))</code> | 01 |
| | 1.5 | What is the purpose of the break statement in a loop? | 01 |
| | 1.6 | What will be printed as the value of x for the below given code? <code>x = 0 while(x < 100) x += 1 print(x)</code> | 01 |
| | 1.7 | Write a program function that takes a list of numbers as input and returns the sum of all even numbers in the list. | 01 |
| | 1.8 | What will be the output for the code given below: <code>int1 = 10 int2 = 6 if int1 != int2 int2 = ++int2 print(int1 - int2)</code> | 01 |
| | 1.9 | What will be the output of this code? <code>mytuple1 = (5, 1, 7, 6, 2) mytuple1.pop(2) print(mytuple1)</code> | 01 |
| | 1.10 | Find the number of objects created when the following code is executed <code>Class A: print("Inside class") A() A() obj = A()</code> | 01 |

| | | | |
|----------------------|---|--|----|
| 8 | a | What are the different modes to open a file in python? Explain the methods functionality <i>flush()</i> , <i>read(n)</i> and <i>tell()</i> in python. | 07 |
| | b | Explain the differences between a function parameter and a function argument in python. Illustrate with an example. | 07 |
| | | | |
| 9 | a | Create a python class called <i>BankAccount</i> with attributes <i>account_number</i> , <i>holder_name</i> , and <i>balance</i> . Implement methods to deposit and withdraw money, and encapsulate the balance attribute to prevent direct modification. | 07 |
| | b | Use the concept of parameterized constructors to pass a different name, age, and salary for each employee object in the class employee. | 07 |
| OR | | | |
| 10 | a | Create a Python class called <i>Rectangle</i> with attributes <i>length</i> and <i>width</i> . Implement a class method <i>create_square</i> that creates a square <i>Rectangle</i> object with equal length and width. | 07 |
| | b | Create a Python class called <i>Shape</i> with a method <i>calculate_area()</i> . Create two subclasses, <i>Circle</i> and <i>Rectangle</i> , and implement the <i>calculate_area()</i> method in each subclass. | 07 |
| LAB COMPONENT | | | |
| 11 | a | Write a python program to read a paragraph from the user and count the number of words, and frequency of words appearing, and search for the specific word. | 10 |
| | b | Create a text file called <i>my_file.txt</i> with some content. Write a python program to capitalize the first letter of every word, and print the content of the file in reverse order. | 10 |

PART-B

| | | |
|-----------|--|-------------------------------|
| 2 | <p>a Apart from being simple, easy to understand and code, there are several reasons/features that makes python a popular language in today's world. What are they?</p> <p>b What are the different categories of operators available in Python? Explain with the help of examples and proper syntax for the same.</p> | <p>07</p> <p>07</p> |
| 3 | <p>a Write a python program that prints all prime numbers between 1 and 20 using nested loops.</p> <p>b Write a python program that uses a for loop to print the following pattern: 1 1 2 1 2 3 1 2 3 4 1 2 3 4 5</p> <p>c What are "infinite loop" in python. Provide an example of how to create one and how to terminate it.</p> | <p>06</p> <p>05</p> <p>03</p> |
| OR | | |
| 4 | <p>a Using relevant code and its output, demonstrate how to skip an iteration in a for loop in python.</p> <p>b Write a python program that calculates the sum of digits in a given number using a loop.</p> <p>c Write a python program to print the given pattern using loops 1 1 1 1 1 2 2 2 2 3 3 3 4 4 5</p> | <p>05</p> <p>05</p> <p>04</p> |
| 5 | <p>a Write a python program that counts the number of vowels in the given string and also prints the reverse of it (without using built-in functions).</p> <p>b What are lists and negative indexing? Write a python program that takes a list of numbers as input and calculates the sum of all even numbers in the list.</p> | <p>07</p> <p>07</p> |
| OR | | |
| 6 | <p>a Write a python program that takes a sentence and counts the number of words in it and also replaces all occurrences of a specific word in a sentence with another word.</p> <p>b Consider a python list, explain the following methods functionality in python <code>append()</code>, <code>extend()</code>, <code>insert()</code>, <code>remove()</code>, <code>pop()</code>, <code>index()</code>, <code>count()</code></p> | <p>07</p> <p>07</p> |
| 7 | <p>a With the help of relevant code, explain the different ways in which exception handling is done in python.</p> <p>b Create a python function called <code>count_characters</code> that takes a string as input and returns a dictionary with character frequencies.</p> | <p>07</p> <p>07</p> |
| OR | | |