Roll N0. | | | | |

Internal Assessment Test II – March 2023

Sub:	Introduction to Python Programming-Scheme and Solution					Sub Code:	BPLCK105B	Branch:	Chemistry Cycle
Date:	07-03-2023	Duration:	90 min's	Max Marks:	50	Sem / Sec:	I / Chemistry Cycle		OBE

Answer any FIVE FULL QUESTIONS

		MARKS	CO	RBT
1 (a)	Differentiate between List and Dictionary with example code **Any 4 points with example [4 marks]**	4	CO2	L2

List	Dictionary
List is a collection of index values pairs	Dictionary is a data container structure of key and value pairs.
List is created by placing elements in **[ ]** separated by commas ", "	Dictionary is created by placing elements in **{ }** as "key":"value", each key value pair is separated by commas ", "
The indices of list are integers starting from 0.	The keys of dictionary can be of any data type.
The elements are accessed via indices.	The elements are accessed via key-values.
L1 = ["python", "theory", "and lab"] print("List containing multiple values: ") **print**(L1[0]) print(L1[2]) print(L1)	Dict1 = {1: 'python', 2: 'theory', 3: 'and lab'} print("Dictionary with the use of Integer Keys: ") print(Dict1[3]) print(Dict1)

(b)	Explain about following string methods with example code snippets i) join() and Split() ii) strip methods **(1+1) =2M x 3=6 Marks** **i) join()** is an inbuilt string function in Python used to join elements of the sequence separated by a string separator. > ', '.join(['cats', 'rats', 'bats']) 'cats, rats, bats' >>> ' '.join(['My', 'name', 'is', 'Simon']) 'My name is Simon' ii)Python **split()** method splits the string into a comma separated list. It separates string based on the separator delimiter. This method takes two parameters and both are optional Example: 'My name is Simon'.split() ['My', 'name', 'is', 'Simon']	6	CO2	L2

Course Instructor Chief Course Instructor

	> 'MyABCnameABCisABCSimon'.split('ABC')
	['My', 'name', 'is', 'Simon']
	iii) The string strip() method helps to remove the whitespaces or specific characters from the string at the beginning and end of the string.
	`>>> spam = '  Hello World  '`
	`>>> spam.strip()`
	`'Hello World'`
	`>>> spam.lstrip()`
	`'Hello World  '`
	`>>> spam.rstrip()`
	`'  Hello World'`			

2 (a)	Write a python program to store 5 students' data in Nested Dictionary. Have student names as the keys and dictionary (inner) which contains Physics, Chemistry, Maths marks as values. Write a function displayaverage() that would take subject name either 'Physics', or 'Chemistry' or 'Maths'
	as argument and display the average of marks for that subject passed. as argument.
	• **Correct logic [3 marks]**
	• **Correct syntax[2 marks]**
	`students={"Alice":{"Maths":90,"Physics":80,"Chem":70},`
	`"Bob":{"Maths":60,"Physics":80,"Chem":77},`
	`"Arvind":{"Maths":98,"Physics":80,"Chem":88},`
	`"Arun":{"Maths":95,"Physics":80,"Chem":67},`
	`}`
	`def average(s,sub):`
	`total=0`
	`for k,v in s.items():`
	`total=total+v.get(sub,0)`
	`return total/len(students)`
	`print(average(students,"Maths"))`
	`print(average(students,"Physics"))`
		5	CO2	L3

(b)	Explain the use of get() and setdefault() methods related to dictionary with suitable code snippet.
	• **Correct definition and syntax[3 marks]**
	• **Correct example[2 marks]**
	get() Method return the value for the given key if present in the dictionary. If not, then it will return None (if get() is used with only one argument).
	Syntax : Dict.get(key, default=None)
	Example:
	`picnicItems = {'apples': 5, 'cups': 2}`
	`>>> 'I am bringing ' + str(picnicItems.get('cups', 0)) + ' cups.'`
	`'I am bringing 2 cups.'`
	setdefault() returns the value of a key (if the key is in dictionary). Else, it inserts a key with the default value to the dictionary.
		5	CO2	L2

Course Instructor Chief Course Instructor

	Syntax: dict.setdefault(key, default_value)
	Example:
	>>> spam = {'name': 'Pooka', 'age': 5}
	>>> spam.setdefault('color', 'black')
	'black'
	spam {'color': 'black', 'age': 5, 'name': 'Pooka'}
	>>> spam.setdefault('color', 'white')
	'black'			

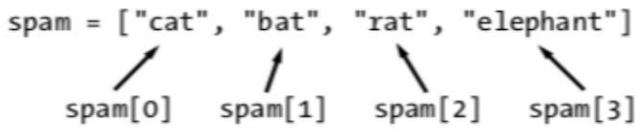
3 (a)	Illustrate with example how the copy.copy() is different from copy.deepcopy() which is relevant to
	lists or dictionaries in Python.
	• **Correct definition and syntax[3 marks]**
	• **Correct example[2 marks]**
	Python provides a module named copy that provides both the copy() and deepcopy() functions. The first of these, copy.copy(), can be used to make a duplicate copy of a mutable value like a list or dictionary, not just a copy of a reference.
	Enter the following into the interactive shell:
	>>> import copy
	>>> spam = ['A', 'B', 'C', 'D']
	>>> cheese = copy.copy(spam)
	>>> cheese[1] = 42
	>>> spam ['A', 'B', 'C', 'D']
	>>> cheese ['A', 42, 'C', 'D']
	Syntax of Shallow copy: copy.copy(x)
	Syntax of Deep copy: copy.deepcopy(x)
	Example: import copy
	>>> import copy
	>>> spam = ['A', 'B', 'C', 'D']
	>>> cheese = copy.copy(spam)
	>>> cheese[1] = 42
	>>> spam
	['A', 'B', 'C', 'D']
	>>> cheese
	'A', 42, 'C', 'D']
	If the list you need to copy contains lists, then use the copy.deepcopy() function instead of copy.copy(). The deepcopy() function will copy these inner lists as well.
	import copy
	l1=[1,2,[3,4],5,6]
	l2=copy.deepcopy(l1)
	l1[2][1]=50
	print(l1)
	print(l2)
	Output:
	`[1, 2, [3, 50], 5, 6]`
	`[1, 2, [3, 4], 5, 6]`
		5	CO2	L2

Course Instructor Chief Course Instructor

(b)	Write a Python program to count the frequency of each vowel in the sentence inputted. • Correct **definition and syntax[3 marks]** • Correct **logic [2 marks]** **message =input()** **count = {}** **for character in message:** **if character in ['a','e','i','o','u','A','E','I','O','U']:** **count.setdefault(character, 0)** **count[character] = count[character] + 1** **print(count)**	5	CO2	L3

Course Instructor

Chief Course Instructor

4(a)	**Explain how indexing and slicing can be performed in List data container with example code**
	
	Definition/Description [2 Marks]
	Example code snippets [3 Marks]
	
	Indexing is used to obtain individual elements.
	 
	
	Last element can be accessed with the index value -1, Second last element with index -2 and so on
	Example :
	>>> spam = ['cat', 'bat', 'rat', 'elephant']
	>>> spam[0]
	'cat'
	Example :
	>>> spam = ['cat', 'bat', 'rat', 'elephant'] >>> spam[-1]
	'elephant
	
	Slicing is used to obtain a sequence of elements
	Example :
	>>> spam = ['cat', 'bat', 'rat', 'elephant']
	>>> spam[0:4]
	['cat', 'bat', 'rat', 'elephant']
		[5]	CO2	L2

(b)	**Write a Python Program to remove all occurrences a given element from the list**
	
	Correct logic [3 marks]
	Correct syntax[2 marks]
	
	mylist = [21, 5, 8, 52, 21, 87]
	r_item = 21
	for item in mylist:
	if(item==r_item):
	mylist.remove(r_item)
	print(mylist)
	
	Output:
	[5, 8, 52, 87]
		[5]	CO2	L3

5(a)	**Explain the use of the following pathlib module methods with example code** **i) Path() ii) Path.cwd() iii) Path.home()** **Definition/Description [2 Marks]** **Example code snippets [3 Marks]** i)Path() will return a string with a file path using the correct path separators. Enter the following into the interactive shell:	[5]	CO3	L2

Course Instructor Chief Course Instructor

	>>> from pathlib import Path
	>>> Path('spam', 'bacon', 'eggs')
	WindowsPath('spam/bacon/eggs')
	ii) Path.cwd() :You can get the current working directory as a string value.
	>>> from pathlib import Path
	>>> Path.cwd()
	WindowsPath('C:/Users/Al/AppData/Local/Programs/Python/Python37')'
	iii) Path.home() : get a Path object of the home folder/directory
	>>> Path.home()
	WindowsPath('C:/Users/Al')			

(b)	**Write a Python program that accepts a sentence and find the number of words, digits, uppercase letters, and lowercase letters**..
	
	Correct logic **[3 marks]**
	Correct syntax**[2 marks]**
	
	`s = input("Enter a sentence: ")`
	`w, d, u, l = 0, 0, 0, 0`
	`l_w = s.split()`
	`w = len(l_w)`
	`for c in s:`
	`  if c.isdigit():`
	`  d = d + 1`
	`  elif c.isupper():`
	`  u = u + 1`
	`  elif c.islower():`
	`  l = l + 1`
	
	`print ("No of Words: ", w)`
	`print ("No of Digits: ", d)`
	`print ("No of Uppercase letters: ", u)`
	`print ("No of Lowercase letters: ", l)`
	
	Output :
	Enter a sentence: Mahesh Huddar 591236
	No of Words: 3
	No of Digits: 6
	No of Uppercase letters: 2
	No of Lowercase letters: 10
		[5]	CO2	L3

6 (a)	**Write the statement/line of code to perform the following using OS module methods i) creating a directory ii) changing the directory iii) Finding the size of the file**
	
	Definition/Description [2 Marks]
	Example code snippets [3 Marks]
	
	i) **creating a directory :** can create new folders with the os.makedirs() function
	>>> import os
	>>> os.makedirs('C:\\delicious\\walnut\\waffles'
	ii) **changing the directory** :get the current working directory as a string value with the Path.cwd() function and change it using os.chdir()
		[5]	CO3	L2

Course Instructor Chief Course Instructor

	>>> from pathlib import Path
	>>> import os
	>>> Path.cwd()
	WindowsPath('C:/Users/Al/AppData/Local/Programs/Python/Python37')'
	>>> os.chdir('C:\\Windows\\System32')
	>>> Path.cwd()
	WindowsPath('C:/Windows/System32')
	iii) **Finding the size of the file:** os.path.getsize(path) will return the size in bytes of the file in the path argument
	os.path.getsize('C:\\Windows\\System32\\calc.exe')			

(b)	**Write a Python program to find the total size of the text files in the folder 'C:\\Windows\\System32'**
	
	Correct logic **[3 marks]**
	Correct syntax**[2 marks]**
	
	p = Path(**'C:\\Windows\\System32'**)
	s=0
	for textFile in p.glob('*.txt'):
	  print(textFile)
	  s=s+os.path.getsize(textFile)
	print(s)
		[5]	CO3	L2

7 (a)	Write a Python program to get the attributes/parts of the file path. Assume that the file ABC.txt is stored in the path "C:/Users/Al/ABC.txt'
	
	Correct logic [3 marks]
	Correct syntax[2 marks]
	
	from pathlib import Path
	>>> p = Path('C:/Users/Al/ABC.txt')
	>>> p.anchor
	'C:\\'
	>>> p.parent
	WindowsPath('C:/Users/Al')
	>>> p.name
	'ABC.txt'
	>>> p.stem
	'ABC'
	>>> p.suffix
	'.txt'
	>>> p.drive
	'C:'
		[5]	CO3	L3

(b)	Explain with program how a text file can be opened, written with content, read the content from the file and append the content into the file. **Definition/Description [2 Marks]** **Example code snippets [3 Marks]** To Open a File : >>> helloFile = open('/Users/your_home_folder/hello.txt')	[5]	CO3	L2

Course Instructor Chief Course Instructor

	The read() method returns the string that is stored in the File.
	>>> helloContent = helloFile.read()
	>>> helloContent
	'Hello, world
	
	To Write into File :
	>>> baconFile = open('bacon.txt', 'w')
	>>> baconFile.write('Hello, world!\n')
	Example :
	>>> baconFile = open('bacon.txt', 'w')
	>>> baconFile.write('Hello, world!\n')
	13
	>>> baconFile.close()
	>>> baconFile = open('bacon.txt', 'a+')
	>>> baconFile.write('Bacon is not a vegetable.')
	25
	>>> baconFile.close()
	>>> baconFile = open('bacon.txt')
	>>> content = baconFile.read()
	>>> baconFile.close()
	>>> print(content)
	
	Output:
	Hello, world!
	Bacon is not a vegetable			

Course Instructor Chief Course Instructor