Subject Code: BCC302

PAPER ID-311224

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM III) THEORY EXAMINATION 2023-24
PYTHON PROGRAMMING

TIME: 3HRS **M.MARKS: 70**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

Q no.	Question	Marks
a.	Describe the concept of list comprehension with a suitable example	2
b.	Differentiate between / and // operator with an example	2

c.	Compute the output of the following python code:
	def count(s):
	for str in string.split():
	s = "&".join(str)
	return s
	print(count("Python is fun to learn."))
		2

d.	How to use the functions defined in library.py in main.py	2
e.	Describe the difference between linspace and argspace.	2
f.	Explain why the program generates an error. x = ['12', 'hello', 456] x[0] *= 3 x[1][1]='bye'	2
g.	Describe about different functions of matplotlib and pandas.	2

SECTION B

2. Attempt any *three* of the following:

a.	Illustrate Unpacking tuples, mutable sequences, and string concatenation with examples	7
b.	Illustrate different list slicing constructs for the following operations on the following list: L = [1, 2, 3, 4, 5, 6, 7, 8, 9] 1. Return a list of numbers starting from the last to second item of the list 2. Return a list that start from 3rd item to second last item. 3. Return a list that has only even position elements of list L to list M. 4. Return a list that starts from the middle of the list L. 5. Return a list that reverses all the elements starting from element at index 0 to middle index only and return the entire list. Divide each element of the list by 2 and replace it with the remainder.	7
c.	Construct a function perfect_square(number) that returns a number if it is a perfect square otherwise it returns -1. For example: perfect_square(1) returns 1 perfect_square (2) returns -1	7
d.	Construct a program to change the contents of the file by reversing each character separated by comma: Hello!! Output H,e,l,l,o,!,!	7
e.	Construct a plot for following dataset using matplotlib :	7

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Food	Calories	Potassium	fat
Meat	250	40	8
Banana	130	55	5
Avocados	140	20	3
Sweet Potatoes	120	30	6
Spinach	20	40	1
Watermelon	20	32	1.5
Coconut water	10	10	0
Beans	50	26	2
Legumes	40	25	1.5
Tomato	19	20	2.5

SECTION C

3. Attempt any *one* part of the following:

a.	Determine a python function removenth(s,n) that takes an input a string and an integer n>=0 and removes a character at index n. If n is beyond the length of s, then whole s is returned. For example: removenth("MANGO",1) returns MNGO removenth("MANGO",3) returns MANO	7
b.	Construct a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically. Suppose the following input is supplied to the program: without, hello, bag, world Then, the output should be: bag, hello, without, world	7

4. Attempt any *one* part of the following:

a.	A website requires the users to input username and password to register. Construct a program to check the validity of password input by users. Following are the criteria for checking the password: 1. At least 1 letter between [a-z] 2. At least 1 number between [0-9] 3. At least 1 letter between [A-Z] 4. At least 1 character from [$#@] 5. Minimum length of transaction password: 6 6. Maximum length of transaction password: 12 Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma	7
b.	Explore the working of while, and for loop with examples.	7

5. Attempt any *one* part of the following:

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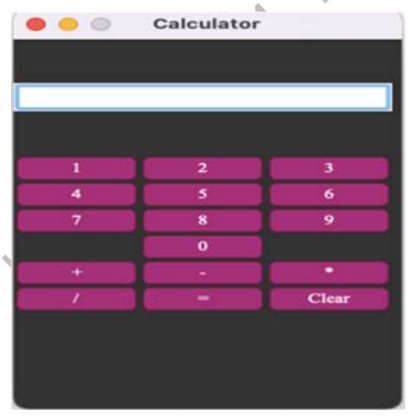
a.	Construct a function ret smaller(l) that returns smallest list from a nested list. If two lists have same length then return the first list that is encountered. For example: ret smaller([[-2, -1, 0, 0.12, 1, 2], [3, 4, 5], [6 , 7, 8, 9, 10], [11, 12, 13, 14, 15]]) returns [3,4,5] ret smaller([[-2, -1, 0, 0.12, 1, 2], [‘a’, ’b’, ’c’, ’d’, 3, 4, 5], [6 , 7, 8, 9, 10], [11, 12, 13, 14, 15]]) returns [6 , 7, 8, 9, 10]	7
b.	Construct following filters: 1. Filter all the numbers 2. Filter all the strings starting with a vowel 3. Filter all the strings that contains any of the following noun: Agra, Ramesh, Tomato, Patna. Create a program that implements these filters to clean the text.	7

6. Attempt any *one* part of the following:

a.	Change all the numbers in the file to text. Construct a program for the same. Example: Given 2 integer numbers, return their product only if the product is equal to or lower than 10. And the result should be: Given **two** integer numbers, return their product only if the product is equal to or lower than **one zero**	7
b.	Construct a program which accepts a sequence of words separated by whitespace as file input. Print the words composed of digits only.	7

7. Attempt any *one* part of the following:

a.	Construct a program to read cities.csv dataset, remove last column and save it in an array. Save the last column to another array. Plot the first two columns.	7
b.	Design a calculator with the following buttons and functionalities like addition, subtraction, multiplication, division and clear. 	7