



Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

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

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

SECTION A**1. Attempt all questions in brief.****2 x 7 = 14**

a.	Give difference between = and is operator.
b.	How we print the character of a given ASCII value in Python?
c.	Can you use else with a for loop? If so, when is it executed?
d.	What will be the output of the following Python code? l= [1, 0, 0, 2, ' hi', ' ', []] print(list(filter(bool, l))
e.	Describe the purpose of the split() method in string manipulation.
f.	What does the readline() function return when it reaches the end of a file?
g.	Which function is used to create identity matrix in NumPy?

SECTION B**2. Attempt any three of the following:****7 x 3 = 21**

a.	Explain the concept of dynamic typing in Python with an example.
b.	Explain how to define a list in Python. Write a Python program to remove duplicates from a list and print the resulting list.
c.	Explain the concept of functions in Python. Write a function that takes a list of numbers and returns the sum of all the numbers in the list.
d.	Write a Python program to read a file named "ABC.txt" and count the number of lines, words, and characters in the file.
e.	Explain the basic usage of matplotlib for plotting graphs. Write a Python program to plot a simple line graph showing the relationship between x = [1, 2, 3, 4, 5] and y = [1, 4, 9, 16, 25].

SECTION C**3. Attempt any one part of the following:****7 x 1 = 7**

(a)	Explain for and while loops used in Python with appropriate example.
(b)	Write a Python Program to find the LCM of two numbers.

4. Attempt any one part of the following:**7 x 1 = 7**

(a)	Write a program takes two strings and checks common letters in both the strings. Enter first string: Hari Enter second string: Hale The common letters are: H a
(b)	Write a Python Program to find the sum all the items in a dictionary. For example if d={'A':100,'B':540,'C':239} then output should be 879.



PAPER ID-411076

Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

TIME: 3 HRS**M.MARKS: 70****5. Attempt any *one* part of the following:****7 x 1 = 7**

(a)	Explain the concept of a set in Python and its characteristics. How elements are added or removed in set.
(b)	Explain how lambda functions can be used within a list comprehension. Write a Python program that uses a lambda function within a list comprehension to convert a list of temperatures in Celsius to Fahrenheit.

6. Attempt any *one* part of the following:**7 x 1 = 7**

(a)	Explain different file opening modes also write a Python Program to read a file and capitalize the first letter of every word in the file.
(b)	What do you mean by generators in Python? How it is created in Python?

7. Attempt any *one* part of the following:**7 x 1 = 7**

(a)	Describe how to generate random numbers using NumPy. Write a Python program to create an array of 5 random integers between 10 and 50.
(b)	Explain the concept of DataFrame in pandas. Write a Python program to create a DataFrame from a dictionary and print it.



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



Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

TIME: 3HRS

M.MARKS: 70

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 <code>removenth(s,n)</code> that takes an input a string and an integer $n \geq 0$ and removes a character at index n . If n is beyond the length of s , then whole s is returned. For example: <code>removenth("MANGO",1)</code> returns MNGO <code>removenth("MANGO",3)</code> 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:



Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

TIME: 3HRS


M.MARKS: 70

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