QP Code: R264A006 | Reg. No | | | | | | | | | | | AY 23

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Fourth Semester – Regular/Supplementary) Examinations, April 2026

23BCDPC24002- Python Programming for Data Science

(CSE-DS)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

	Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a.	Explain the difference between the string assignments s1 = 'sai' and s2 = "sai" in Python.	CO2	K2
b.	Given a list lst = [10, 15, 20, 25, 30], predict the output of the following list comprehension and justify. result = [x//2 if x % 2 == 0 else x*2 for x in lst if x > 15]	CO2	K4
c.	Define user-defined function with an example.	CO1	K1
d.	Given that mylist = ['this', 'is', 'an', 'exam'] i) Apply list comprehension to find the length of each word in mylist. ii) Use map() to find the length of each word in mylist.	CO2	K2
e.	List out the differences between a List and a Numpy array.	CO2	K1

PART – B **(10 x 5 = 50 Marks)**

	Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a.	Explain the slice operation in Python. Illustrate how slicing is used with strings, lists, and tuples, including syntax and examples.	5	CO2	K2
b.	Demonstrate the set operations with an example: union, intersection, difference, symmetric-difference.	5	CO2	K3
	(OR)			
c.	Explain about list data structure with any 4 methods with an example.	5	CO2	K2
d.	Explain the different string formats available in Python with examples.	5	CO2	K2
3.a.	Implement a Python program demonstrating default and variable length arguments in functions.	5	CO2	K3
b.	Develop a Python program using lambda functions to filter all even numbers from a given list and display the result.	5	CO3	K3
	(OR)			
c.	Write a program using a for loop on a string that: Counts vowels and Stops execution if a digit is found. Explain how break affects loop execution.	5	CO2	K3
d.	Create a Python anonymous function using a lambda expression combined with built-in functions to find the largest of three numbers.	5	CO3	K5
4.a.	Design a class for a banking system where interest is common for all accounts but balance differs. Identify and justify the types of variables used.	5	CO3	K3
b.	A Python program crashes when dividing user input values. Design a solution to safely handle invalid inputs and zero division.	5	CO2	K3
	(OR)			

c.	Explain how method overloading is simulated in Python. Write a program to demonstrate this behavior.	5	CO3	K3
d.	Implement a Python program where an exception is deliberately raised in an inner try block and another exception is raised in the outer try block.	5	CO2	K3
5.a.	Explain about series, data frame, and find the correlation of data-frame in Pandas with an example.	5	CO3	K2
b.	Evaluate the use of zeros(), ones(), and empty() functions with an example.	5	CO4	K5
	(OR)			
c.	Given two arrays of different shapes, explain how broadcasting works in NumPy. Illustrate with a real-time example.	5	CO4	K5
d.	Design and draw the vertical bar graph, horizontal bar graph, pie chart for the given data x=[20,25,15,35] and y=['Banana','Apple','Orange','Mango','Kiw'']	5	CO4	K4
6.a.	You are given multidimensional data. Justify which type of plot (scatter, histogram, or box plot) would best represent the data and why.	5	CO6	K5
b.	Explain how a Pandas Series differs from a DataFrame. Illustrate a scenario where converting a Series into a DataFrame is necessary.	5	CO6	K3
	(OR)			
c.	Explain the importance of customizing line styles, colors, and markers in a plot. How do they enhance data interpretation?	5	CO6	K2
d.	Discuss the use of Matplotlib for data visualization. Write a program to create a line chart with customized color, line style, and markers.	5	CO4	K3

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