

Semester Examination-2024
Department of Computer Science & Engineering
School of Engineering Sciences and Technology, Jamia Hamdard, New Delhi, 110062
M.Sc. (Computational and Systems Biology and Bioinformatics)
Python Programming (MCSB 302)

Time: 2.30 Hours

Marks: 60

Section A

Answer ALL questions

(4x5= 20 Marks)

S.No.	Question	CO	BL
1	Describe a real-world scenario where you would use/apply Python or R?	1	1
2	Write code in Python to find the GC contents in ACGTACGT.	4	3
3	Differentiate between GGPOLT2 and Matplotlib.	5	4
4	Find the output of the following code snippet. import pandas as pd data = {'A': [1, 2, None, 4, 5], 'B': [10, 20, 30, None, 50]} df = pd.DataFrame(data) c = df.mean() d = df.fillna(c) print(d)	4	5

Section B

Answer any FOUR questions

(4x10= 40 Marks)

S.No.	Question	CO	BL
1	a) Define Multivariate and univariate analysis by giving suitable examples. b) Find the output of the following codes : import array as arr numbers_list = [2, 5, 62, 5, 42, 52, 48, 5] print(numbers_list[2:5]) print(numbers_list[-4:]) print(numbers_list[5:]) print(numbers_list[:])	5,2	2,4
2	a) What is Hypothesis testing? Explain with example. b) Write the output of the following code explaining each line: import numpy as np p1 = np.array([1, 2]) p2 = np.array([4, 6]) distance = np.linalg.norm(p1 - p2) print("Distance:", distance)	3,4	3,5
3	Discuss different types of loops in Python with example.	2	1,2
4	a) Discuss feature selection and gradient descent with example.. b) Write the output of the following codes with proper justification. import scipy.stats as stats group1 = [10, 12, 14, 16] group2 = [8, 10, 12, 14] group3 = [12, 14, 16, 18] f_statistic, p_value = stats.f_oneway(group1, group2, group3) print("F-statistic:", f_statistic) print("p-value:", p_value)	3,4	2,5
5	a) Find length of sequence (AACCGGTT) using Lambda function. b) Differentiate among List, Set, Dictionary and Tuple.	2,4	1,5
6	a) Write short notes on: i) Data Frame ii) Generator & Decoder b) Write the output of the following code with proper justifications. Assume any value for Hindi-Character: x="जामिया" y="हमदर्द" z=x+ " " + y print(z) for a in y: b=ord(a) print(f"Output code point for '{a}': U+{b:04X}")	4,5	2,5