

M.Sc. Sem.-3 Examination

501

Bio-Informatics

November-2025

Time : 2-30 Hours]

[Max. Marks : 70

Qu1 : Answer the following:

- Briefly explain operators in Python using examples. [7]
- Briefly explain the list type in Python including list comprehension and splicing using examples [7]

OR

Qu1 : Answer the following:

- Briefly explain the looping construct in Python using examples [7]
- Write a Python script to input a string and print the number of words and characters in the string [7]

Qu2 : Answer the following:

- Briefly explain the set type in Python along with its functions. [7]
- Write a Python script to input a string and print the frequency of every character in the string [7]

OR

Qu2 : Answer the following:

- Briefly explain dictionaries and its functions in Python using examples. [7]
- Briefly explain how files are used in Python using examples. Write a Python script to read a fasta file and print the GC percent of the sequence [7]

Qu3 : Answer the following:

- Briefly explain exception handling in Python with the try... except block using examples [7]
- Write a python script to input a directory name and list only the txt files [7]

OR

Qu3 : Answer the following:

- Briefly explain functions and lambda in python using examples [7]
- Briefly explain modules in Python and how they are used. How to create packages using example [7]

Qu4 : Answer the following:

- Briefly explain Biopython using examples [7]
- Briefly explain Regular Expressions in Python using examples [7]

OR

Qu4 : Answer the following:

- Explain briefly inheritance in Python using examples. Show how overriding is implemented using an example [7]
- Write a Python script to create a class Sequence [7]

Data Member: Sequence

Methods:

Write a constructor which takes all data members as parameters

ShowDetails

Prints the Sequence and the length of the sequence

Create a class Gene inheriting from the Sequence Class

Data Member : GenelD, Organism, Description

Methods :

Write the constructor which takes all data members as parameter

ShowDetails

Override the Sequence class method

Show the Gene details and the Sequence details

Qu5 : Attempt any seven :

[14]

1. Given

x="Let us work"

Write the command to create a list of words of the above string

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2. Given a list of genes :
Lst=['DISC1','DTNBP1','COMT','NRG1','DAOA','DRD2','RGS4','CBSa','CHRNA7','5-HT2A']
Write the command to print the last 3 genes
3. Given the code predict the output :
for i in range(1,10,5):
 print(i)
else:
 print('end')
4. Write the command to delete DRD2 from the given list
Lst=['DISC1','DTNBP1','COMT','NRG1','DAOA','DRD2','RGS4','CBSa','CHRNA7','5-HT2A']
5. Given a Dictionary
D={'a':1,'b':2,'c':3,'d':4,'e':5}
Write the code to print the output as
a->1, b->2, c->3, d->4, e->5
6. Write the command to read a csv file in Pandas
7. Given the code :
try:
 x=int(input("Enter a number : "))
 y=int(input("Enter a number : "))
 print(x/y)
except:
 print("Divide by Zero Error")
else:
 print("I am in else")
What will be the output if 7 and 3 are entered and what will be the output if 5 and 0 are entered
8. Write the regular expression to match all the occurrences of A followed by a T or G followed by a C followed by G or C or A
9. Write the open function to open a file file1.txt to add text at the end of the file
10. Write the code to read a fasta file and print only the sequence
11. Write a list comprehension to create list2 of numbers from list1 which are greater than 10
12. Write code to create dictionary from the given lists
k=['a','b','c']
v=[1,2,3]
as d={'a':1,'b':2,'c':3}

—X—