

GUJARAT TECHNOLOGICAL UNIVERSITY

POST GRADUATE DIPLOMA IN BIOINFORMATICS (DB) - SEMESTER - 1 EXAMINATION -
WINTER - 2024

Subject Code:1310203

Date: 01 Jan 2025

Subject Name: Python for Bioinformatics

Time:10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw neat and clean diagrams as required.

Q.1 Write a note on following

**(Marks-
10X2=20)**

1. Describe the Class and Object concept of object-oriented programming (OOP) along with respective illustrative examples.
2. Examine the distinctive features of Python in comparison to other programming languages.
3. Analyze the various categories of errors in Python along with illustrative examples.
4. Evaluate the concept of operator precedence in Python, assigning appropriate importance to the order of execution.
5. Differentiate between local variables and global variables in Python.
6. What is break, continue and pass in Python?
7. What is the difference between Python Arrays and lists?
8. How are arguments passed by value or by reference in python?
9. Write a code for counting the number of every character in a given text file.
10. Why use else in try/except construct in Python?

Q.2 Answer the following (Any 2 out of 3)

**(Marks-
2X10=20)**

1. Develop a script to determine the frequency of occurrences of the 'GATT' site within DNA sequences found in a FASTA file.
2. Write a program to determine the GC content of a DNA sequence utilizing Biopython.
3. Write a Python program to create ascending ordered lists of (i) positive numbers (ii) negative numbers (iii) odd numbers and (iv) even numbers from a master list.

Q.3 Answer the following (Any 6 out of 8)

**(Marks-
6X5=30)**

1. Examine and describe, in detail, the functionalities and use cases of the following string methods: capitalize(), isalnum(), isupper(), isdigit(), rfind().
2. Write a code to find the total number of amino acids in the given protein sequence.
3. Write a code to count the occurrences of each base in the given DNA sequence.
4. Write a python script utilizing List data type to perform transcription on a given DNA sequence.
5. Show the use of different data types in Python program.
6. Show the use of dictionary in Python program.
7. Show the use of file creation in different modes with suitable example.
8. Show the use of writing & appending the data in existing file with suitable example.
