Date: 06-11-2019 **Assignment # 02**

Subject: Introduction to Bioinformatics

Total Marks: 100

Deadline for submission is **17:00 PKT, Sunday 17th November 2019**. Upload your code on Slate.

Questions:

1. Write a program in Python language that is given a gene sequence and splicing points (locations inside the input sequence) as input (via input file) and it shows all possible mRNA and protein sequences which could be formed after transcription and translation.

2. Write another program in Python language that is given two sequences and scoring scheme (arbitrary) as input and it computes optimal alignment (both global and local) using dynamic programming algorithms. The program must display the optimal alignment as well as the total score.

Note: Input sequences for the above programs will be provided via files. So you have to pass file names as input parameters. An input sequence example is given below:

```
gcgccagacgatgctaggtgcgtccgtatcaagattcgaggtcgctactggcttcgcttg
ccgatcgagctcagagtttgtgagagttgttactaattgcgtggtcgcctaatatccttg
gtgaccggaacgacggctactggagtccatgatcgcaagcgtcgggctggggtaaaagag
gctcagctcataatagtccgccccaccagtacgggactcgataggccccgtcgttgccgt
agaaacgcaattttcctcagacccactatacgcacctcgatttagcatggttccggggtt
gcgctttgagaatcatacgtaaggatcggaacctaggaatgcaccacagaactttgaaat
actagaacaagttgattgacaacggagtatcggcgccccacatttaacgaataattgcag
gcgccagacgatgctaggtgcgtccgtatcaagattcgaggtcgctactggcttcgcttg
ccgatcgagctcagagtttgtgagagttgttactaattgcgtggtcgcctaatatccttg
atactacgtgggtgtactagacatcccggacagaaaatctcttaaacgctagagttctct
tggaagcgcctgcacttcttgtgaacatacgatgatagccactctaagcccaacgcactt
cgcttggcccacattgccccagagcttattcatcgacaggcgttccactcttggattca
tcagtaaactttattatacgtggtaagcgtgcttatagctgtcggaatctcacttaggcg
gattgaagtgagacagcctgaaagtaaccgtgtacaggcgccgtcaatgtgttttgagtg
tgcacctacaaaaagtgttatttaggcaggggagctttgtagtttctttagaagagccgc
gaatgaaccaacggtagactgcgagcgcgttcaacctaat
```

xxx------- Good Luck! -------xxx