**Date: 27-10-2018 Assignment # 01**

**Subject: Introduction to Bioinformatics**

**Total Marks: 100**

**Deadline** for submission is **17:00 PKT, Sunday 4th November 2018**. 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:

acgtccgcaagagaagccttaatatattcaaaaagctacgcctcagatttcgcgctcgag

cccaaaacaactggtgtacgggttgatcacatcaaatgaagtcgctaaagtcggtgatct

cactatccttgtcttcggcttttgctctctcggctatcatctaagcaggcgagttccatg

gtgaccggaacgacggctactggagtccatgatcgcaagcgtcgggctggggtaaaagag

gctcagctcataatagtccgccccaccagtacgggactcgataggccccgtcgttgccgt

agaaacgcaattttcctcagacccactatacgcacctcgatttagcatggttccggggtt

gcgctttgagaatcatacgtaaggatcggaacctaggaatgcaccacagaactttgaaat

actagaacaagttgattgacaacggagtatcggcgccccacatttaacgaataattgcag

gcgccagacgatgctaggtgcgtccgtatcaagattcgaggtcgctactggcttcgcttg

ccgatcgagctcagagtttgtgagagttgttactaattgcgtggtcgcctaatatccttg

atactacgtgggtgtactagacatcccggacagaaaatctcttaaacgctagagttctct

tggaagcgcctgcacttcttgtgaacatacgatgatagccactctaagcccaacgcactt

cgcttggcccacattgcccccagagcttattcatcgacaggcgttccactcttggattca

tcagtaaactttattatacgtggtaagcgtgcttatagctgtcggaatctcacttaggcg

gattgaagtgagacagcctgaaagtaaccgtgtacaggcgccgtcaatgtgttttgagtg

tgcacctacaaaaagtgttatttaggcaggggagctttgtagtttctttagaagagccgc

gaatgaaccaacggtagactgcgagcgcgttcaacctaat

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