



Daffodil International University

Department of Computer Science and Engineering

Faculty of Science and Information Technology

Mid Term Examination, Semester: Fall - 2019

Course Title: Introduction to Bioinformatics

Course Code: CSE 235 Section: All (Day) Course Teacher: All

Time: 1.5 Hours

Full Marks: 25

Answer any 3 (Three) of the following questions. Question no. 1 is mandatory

1. Suppose you have a DNA of a mammal *Ailuropoda melanoleuca* and a bacterium sample of *Prochlorococcus marinus*. Now apply first generation sequencing using the given two sample. Draw and describe every steps of the process. [5]
2. Draw and describe central dogma, gene regulation and alternative splicing. [4+3+3]
3. Apply Needleman – Wunsch's alignment algorithm over the following two sequences and write the optimal alignment where values of match, mismatch and gap are +2, -2, -4 consecutively.
First Sequence: ATGCATCA, Second Sequence: AGCATAA [10]
4. Construct suffix tree, suffix array, and BWT(T) over the following sequence and verify you answer by doing LF mapping.
Sequence: ATTATATAATTA [2+3+3+2]



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