**Term Test-2**

*Answer **all** the questions in the Exam Booklets. Put your name and student number on all exam booklets. Draw **structures** and **diagrams** where appropriate.*

The total number of marks is 52 and you have 75 minutes to complete the exam.

(4)   1.   Outline the theoretical justification given for a single molecule protein protein sequencing method that was proposed in 2015.

(10)   2.   Describe the results of a study in which synthetic *D*- and *L*-HIV protease were produced.

(8)   3.   Discuss Small Angle X-ray Scattering of proteins.

(6)   4.   What is a dihedral angle? Define the ω-dihedral angle.

(6)   5.   Draw and label a Ramachandran diagram and indicate the positions of right- and left-handed α-helices, the right-handed 3_{10} helix, the collagen triple helix and parallel or antiparallel β-strands.

(8)   6.   With the use of the following diagram describe the structures of parallel and antiparallel β-sheets.
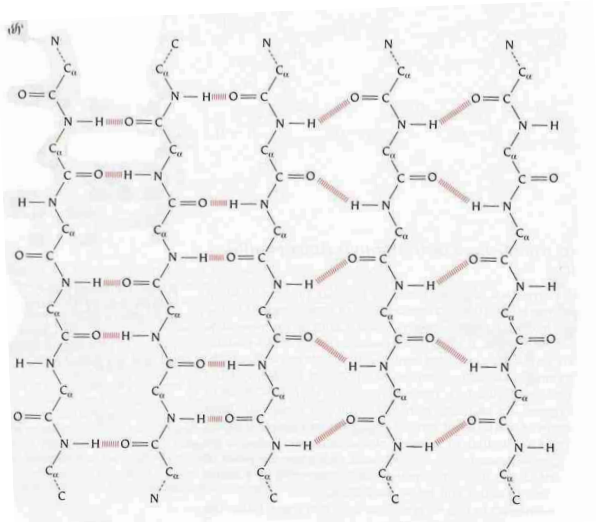
(2)   7.   Briefly describe the homeodomain structure.

(8)   8.   Draw a helical wheel for a heptad repeat of a dimeric or trimeric coiled-coil. Identify the structural roles and features of the amino acids at each position in the wheel.