Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: AminoAcids, Proteins & DNA

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

Use the information in the Data Booklet to help you answer these questions.

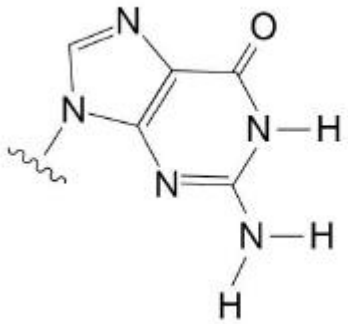
A single strand of DNA is made from many nucleotides linked together.

(a) Draw the structure of the nucleotide that contains guanine, showing clearly the bonding between the components.

(3)

(b) Two complementary strands of DNA form a double helix in which one strand is attracted to another by interactions between pairs of bases.

Complete the base pair diagram showing the interactions.



(2)

(c) State how the interactions in the adenine-thymine base pair differ from those you identified in part **(b)**.

_____

_____

(1)

(d) Urea has the displayed formula

Downloaded from www.merit-minds.com



Suggest why urea is effective at separating the complementary strands in DNA.

_____

_____

_____

_____

_____

(2)

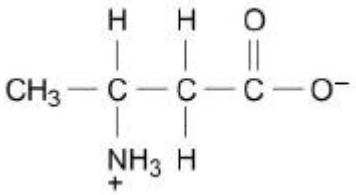
(Total 8 marks)

Downloaded from www.merit-minds.com

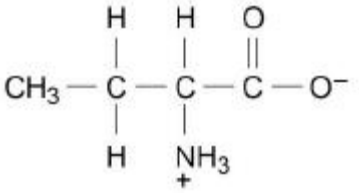
Q2.

Which structure shows 2-aminobutanoic acid as a zwitterion?

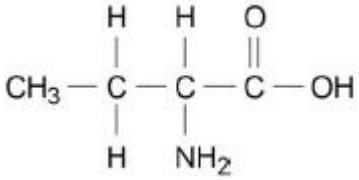
A



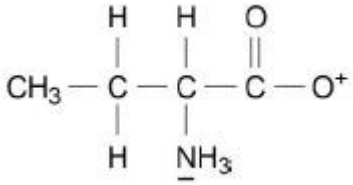
B



C



D

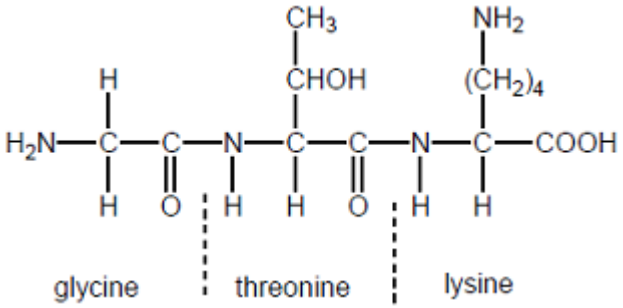


(Total 1 mark)

Downloaded from www.merit-minds.com

Q3.

The tripeptide shown in the following figure is formed from the amino acids glycine, threonine and lysine.



(a) Draw a separate circle around **each** of the asymmetric carbon atoms in the tripeptide in the figure.

(1)

(b) Draw the zwitterion of glycine.

(1)

(c) Draw the structure of the species formed when glycine reacts with an excess of bromomethane.

(1)

(d) Deduce the IUPAC name of threonine.

_____

(1)

(e) Draw the structure of the species formed by lysine at low pH.

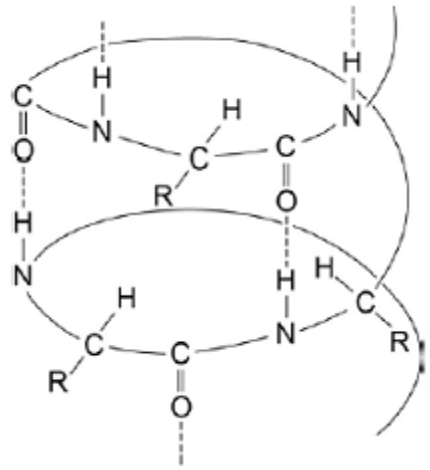
Downloaded from www.merit-minds.com

(1)
(Total 5 marks)

Downloaded from www.merit-minds.com

Q4.

The following figure shows a simplified representation of the arrangement of some amino acids in a portion of a protein structure in the form of an α-helix.



(a) Name the type of protein structure in the figure.

_____

(1)

(b) Explain the origin of the interaction represented by the dotted lines in the figure above.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(4)

(Total 5 marks)

Downloaded from www.merit-minds.com