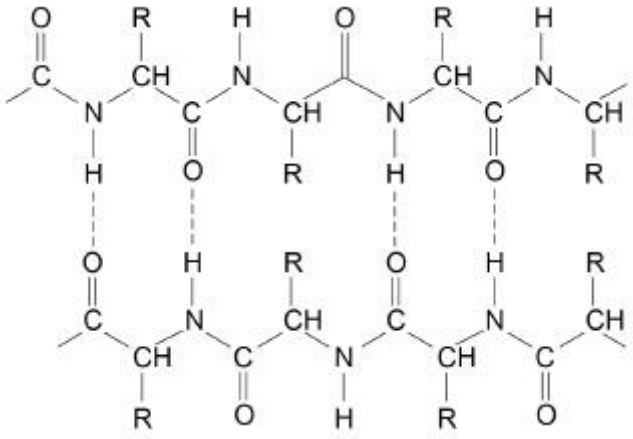
Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Physical 1

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

Q1.

Use the Data Booklet to help you answer this question about amino acids.
The diagram shows parts of two polypeptide chains in a beta-pleated sheet of a protein.



(a) The polypeptide chains are held together by hydrogen bonding as shown in the diagram.

Explain how these hydrogen bonds form.

_____

_____

_____

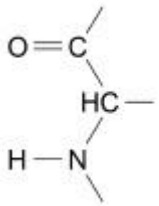
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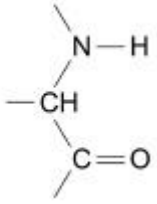
_____

(2)

(b) A different type of bond can form between two polypeptide chains when the chains each contain the amino acid cysteine.

Complete the structure to show the bond that forms between the side chains of two cysteine molecules.





(1)

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(c) The type of bond in **part (b)** between two polypeptide chains influences the three-dimensional structure of the protein.

Name this type of protein structure.

_____

(1)

(d) Draw the structure of the zwitterion of a dipeptide formed by alanine and serine.

(2)

(Total 6 marks)

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Q2.

This question is about some Period 3 elements and their oxides.

(a) Write an equation for the reaction of phosphorus with an excess of oxygen.

_____

(1)

(b) Describe a test you could carry out in a test tube to distinguish between sodium oxide and the product of the reaction in part (a)

_____

_____

_____

_____

_____

_____

(3)

(c) State the type of crystal structure shown in silicon dioxide and in sulfur trioxide.

Silicon dioxide _____

Sulfur trioxide _____

(2)

(d) Explain why silicon dioxide has a higher melting point than sulfur trioxide.

_____

_____

_____

_____

_____

_____

_____

_____

(4)

(e) Write an equation for the reaction of sulfur trioxide with potassium hydroxide solution.

_____

_____

(1)

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(f) Write an equation for the reaction of an excess of magnesium oxide with phosphoric acid.

_____

_____

(1)

(g) Draw the displayed formula of the undissociated acid formed when sulfur dioxide reacts with water.

(1)

(Total 13 marks)

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