1. A molecule of DNA contains four different bases.

   The four bases are arranged in a long chain. The chain of bases controls the synthesis of a protein.

   For example, the chain of bases could make a protein that determines eye colour. The diagram below shows some bases along a strand of DNA.

   ![Diagram showing bases along a DNA strand]

   1 (a) (i) What word is used to describe ‘a small section of a DNA molecule that controls the synthesis of a protein’?
   
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   (1 mark)

   1 (a) (ii) In the cell, where are proteins synthesised?
   
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   (1 mark)

   1 (a) (iii) Describe how proteins are synthesised from the chain of bases in DNA. Use the diagram to help you answer this question.
   
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   (3 marks)

   1 (b) Mistakes sometimes occur when DNA molecules are copied during cell division.

   Suppose that one of the W bases shown in the diagram was substituted by an X base.

   What might be the effect of this change in structure of the protein?
   
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   (1 mark)

   (Total 6 marks)

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