

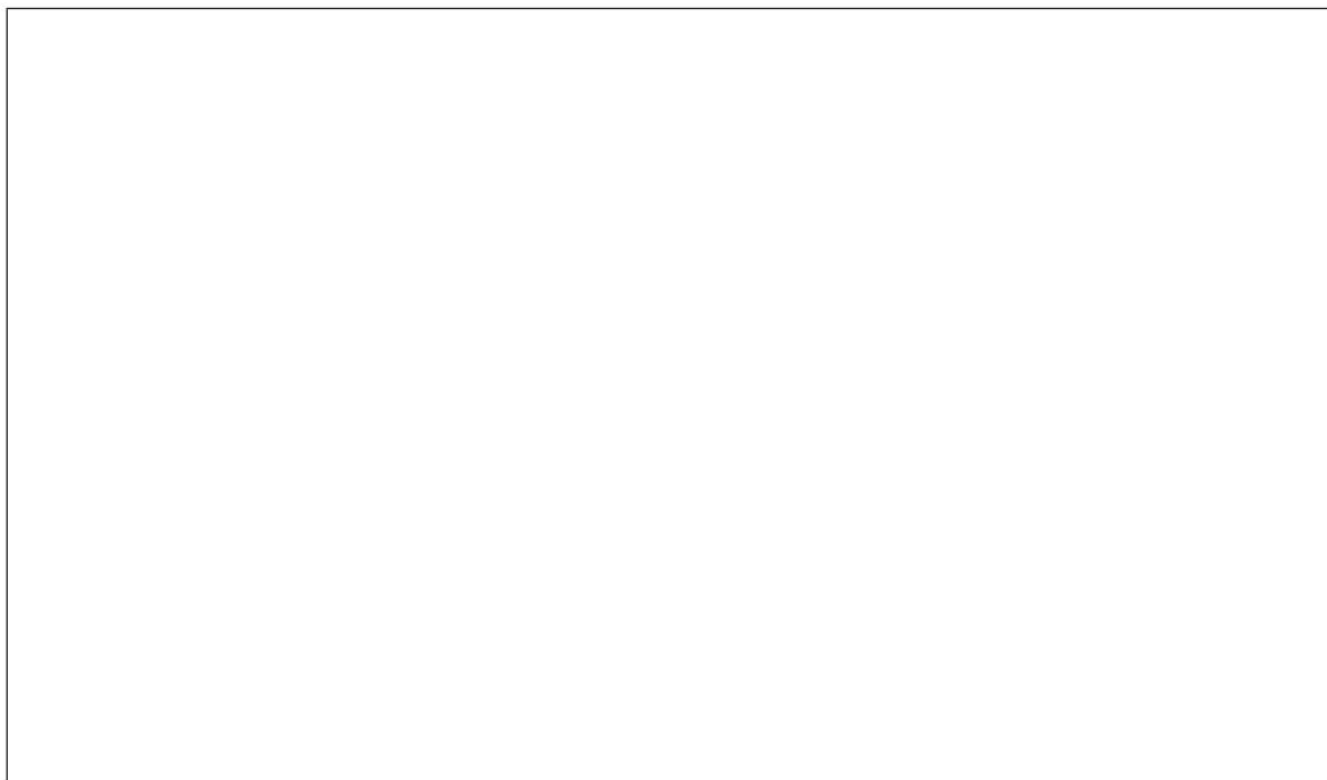
Question 39**(14 marks)**

The Atlantic longfin inshore squid is able to blend into its surroundings and seemingly disappear. It does this by reflecting light using specialised cells. The squid tunes and adapts the reflection of light from these cells by using a class of proteins called reflectins.

The amino acid sequences of some reflectins from this squid have been characterised. A small sequence from one of the reflectins is shown below.



- (a) Draw the full structural formula of this section of the reflectin. Show all hydrogen atoms. (3 marks)



(b) Circle **one** peptide bond in the structure that you drew in part (a).

(1 mark)

The amino acid leucine is also found in reflectin.

- (c) Draw the full structural formula of leucine, Leu, in each of the conditions specified below. Show all hydrogen atoms. (4 marks)

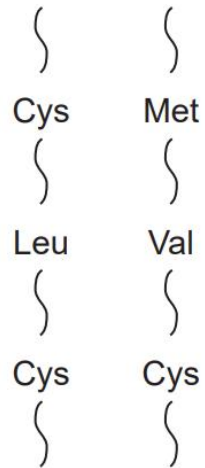
Low pH (acidic)

High pH (basic)

(d) Explain why the structure of Leu is pH dependent.

(3 marks)

Consider the following amino acids found on neighbouring protein chains as they come into proximity to each other.



(e) Identify the pair **most** strongly attracted to each other. Justify your choice. (3 marks)
