

**3** Bags made from starch are better for the environment than plastic bags made from fossil fuels.

Bags made from starch are decomposed by microorganisms such as soil fungi.

(a) (i) Which of these is a feature of fungi?

(1)

- ☐ **A** chloroplasts in the cytoplasm
- ☐ **B** starch stored in the cytoplasm
- ☐ **C** thread-like hyphae
- ☐ **D** walls made of cellulose

(ii) The soil fungi release an enzyme called amylase that digests the bag.

What is the product of this digestion?

(1)

- ☐ **A** amino acids
- ☐ **B** fatty acids
- ☐ **C** glycerol
- ☐ **D** maltose

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(iii) Amylase is a protein.

Describe how protein is made in a cell.

(5)

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(b) A student investigates the effect of soil pH on the decomposition of bags made from starch.

She uses this method.

- cut two small squares from a bag
- measure the mass of each small square
- place one square in a beaker of soil with a pH of 7.0
- place the other square in a beaker of soil with a pH of 9.0
- after 10 days, remove the squares and measure their mass again

The table shows the student's results.

pH of soil	Mass of square in g		Percentage loss in mass (%)
	at start	after 10 days	
7.0	2.00	1.00	50.0
9.0	2.10	0.62	

(i) Calculate the percentage loss in mass shown by the square in pH 9.0 soil.

(1)

percentage = .....

(ii) Calculate the difference between the percentage loss in mass for the two squares.

(1)

difference = .....



(iii) Explain how the student could improve her method so that she can obtain more accurate results.

(4)

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(Total for Question 3 = 13 marks)

