

**1 1**

A gardener wants to add compost to the soil to increase his yield of strawberries.  
The gardener wants to make his own compost.

**1 1 . 1**

An airtight compost heap causes anaerobic decay.

Explain why the gardener might be against producing compost using this method.

**[2 marks]**

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The gardener finds this research on the Internet:

**'A carbon to nitrogen ratio of 25:1 will produce fertile compost.'**

Look at **Table 7**.

**Table 7**

Type of material to compost	Mass of carbon in sample in g	Mass of nitrogen in sample in g	Carbon:nitrogen ratio
Chicken manure	8.75	1.25	7:1
Horse manure	10.00	0.50	20:1
Peat moss	9.80	0.20	<b>X</b>

**1 1** . **2** Determine the ratio **X** in **Table 7**.

[1 mark]

Ratio \_\_\_\_\_

**1 1** . **3** Which type of material in **Table 7** would be **best** for the gardener to use to make his compost?

Justify your answer.

[1 mark]

**Question 11 continues on the next page**



1 1 . 5 **Figure 15** shows two strawberries.

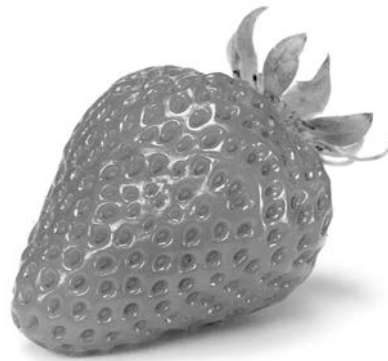
- Both strawberries were picked from the same strawberry plant.
- Both strawberries were picked 3 days ago.
- The strawberries were stored in different conditions.

**Figure 15**

**Strawberry A**



**Strawberry B**



Give **three** possible reasons that may have caused strawberry **A** to decay.

**[3 marks]**

1 \_\_\_\_\_  
\_\_\_\_\_  
2 \_\_\_\_\_  
\_\_\_\_\_  
3 \_\_\_\_\_  
\_\_\_\_\_

**Turn over for the next question**

**Question 11**

<b>Question</b>	<b>Answers</b>	<b>Extra information</b>	<b>Mark</b>	<b>AO / Spec. Ref.</b>
<b>11.1</b>	methane is produced  which is a greenhouse gas / causes global warming	ignore bad smell	1  1	AO1/1 4.7.2.3  AO1/1 4.7.3.5
<b>11.2</b>	(9.80/0.20 = 49 therefore) 49:1		1	AO2/2 4.4.1.3
<b>11.3</b>	horse (manure)  closest to 25:1 (ratio)	allow ecf from <b>11.2</b>	1	AO3/2a 4.7.2.3

## Question 11 continued

Question	Answers	Mark	AO / Spec. Ref.	
11.4	<b>Level 3:</b> A detailed and coherent explanation is given, which logically links how carbon is released from dead leaves and how carbon is taken up by a plant then used in growth.	5–6	AO1/1 4.4.1.1 4.4.1.3 4.4.2.1 4.7.2.2	
	<b>Level 2:</b> A description of how carbon is released from dead leaves and how carbon is taken up by a plant, with attempts at relevant explanation, but linking is not clear.	3–4		
	<b>Level 1:</b> Simple statements are made, but no attempt to link to explanations.	1–2		
	No relevant content	0		
	<b>Indicative content</b>  <b>statements:</b> <ul style="list-style-type: none"> <li>• (carbon compounds in) dead leaves are broken down by microorganisms / decomposers / bacteria / fungi</li> <li>• photosynthesis uses carbon dioxide</li> </ul> <b>explanations:</b> <ul style="list-style-type: none"> <li>• (microorganisms) respire</li> <li>• (and) release the carbon from the leaves as carbon dioxide</li> <li>• plants take in the carbon dioxide released to use in photosynthesis to produce glucose</li> </ul> <b>use of carbon in growth:</b> <ul style="list-style-type: none"> <li>• glucose produced in photosynthesis is used to make amino acids / proteins / cellulose</li> <li>• (which are) required for the growth of new leaves</li> </ul>			
11.5	any <b>three</b> from: (storage conditions) <ul style="list-style-type: none"> <li>• (at) higher temperature / hotter</li> <li>• (had) more oxygen</li> <li>• (had) more water / moisture</li> <li>• (contained) more microorganisms (that cause decay)</li> </ul>	allow reference to bacteria / fungi / mould	3	AO2/1 4.7.2.3
<b>Total</b>		<b>13</b>		