





Biology 1.6 - Ecosystems & Human Impact on Environment - Foundation Tier

Question 1.

Tracy investigated decay using two leaves of the same size from the same tree.

- She made a drawing of each leaf.
- She then buried each leaf in a separate beaker each containing equal volumes of soil.
- She kept one beaker at 5°C and one at 15°C.
- After one month, she removed the leaves from the soil and drew them again.

Her drawings are shown in the table below.

Temperature (°C)	Drawing of leaf	
	start	after one month
5		
15		

(a) State the name of **one** group of microorganisms that cause decay.

[1]

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(b) Describe the results of the investigation shown by the drawings.

[2]

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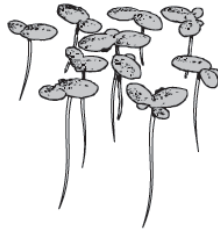
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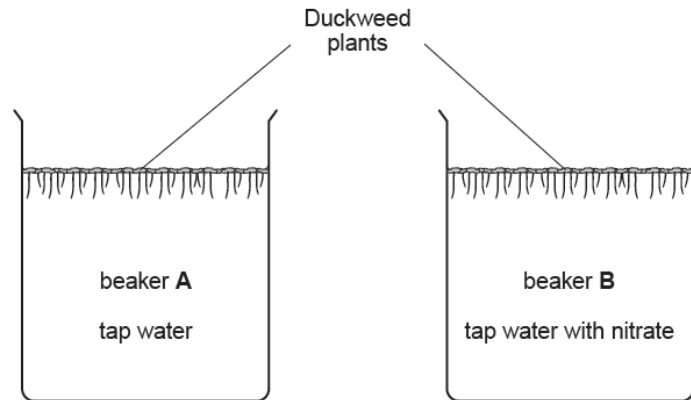
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Question 2.

The drawing shows some water plants called Duckweed (*Lemna minor*).



Students investigated the effect of nitrate on the numbers of living Duckweed plants growing in beakers as shown below.



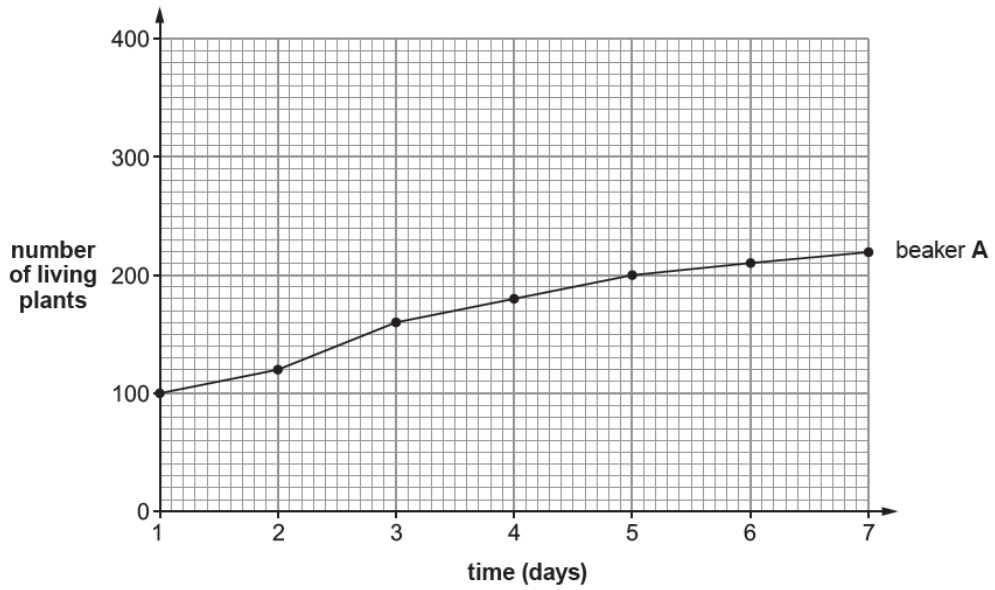
The results are shown in the table below.

day	number of living plants	
	beaker A	beaker B
1	100	100
2	120	140
3	160	180
4	180	280
5	200	360
6	210	340
7	220	300

(a) Complete the graph below to show the changes in the number of living plants in beaker **B** by:

(i) plotting the points; [2]

(ii) joining the points with a ruler. [1]



(iii) From the graph, describe the changes in the number of living plants in beaker **B** between days 1 and 7. [1]

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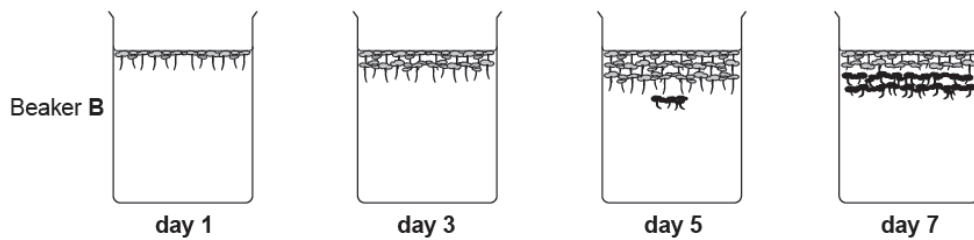
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(b) The results in beaker **A** (the control) allow a comparison to be made with the results in beaker **B**.

Why is it necessary to compare the results in this investigation? [1]

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(c) The diagrams show the plants in beaker **B** during the investigation.



Key		living plants
		dead & decaying plants

(i) From the diagram above, on which day (1, 3, 5 or 7):

I is the level of dissolved oxygen in the water lowest?

Day [1]

II are the number of bacteria in the water highest?

Day [1]

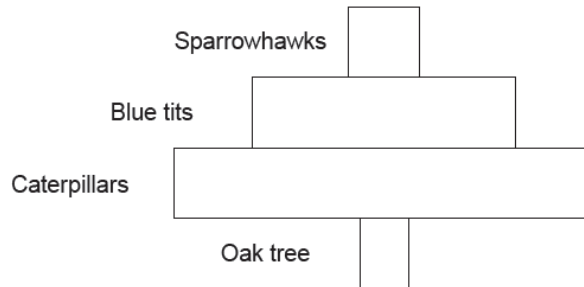
(ii) Explain why the level of dissolved oxygen in beaker **B** changes during the investigation. [2]

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Question 3.

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The diagram below shows the pyramid of numbers for a food chain found in a small wood.



- (a) (i) Show the correct relationship in the food chain by adding **one** of the following numbers to **each** of the feeding levels in the above pyramid of numbers. [1]

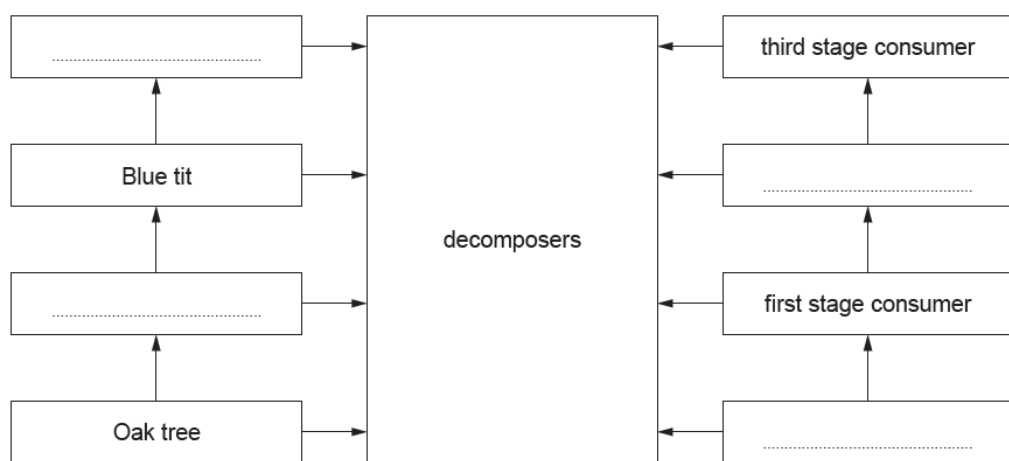
1 17 3456 2

- (ii) I In the space below draw a **labelled** pyramid of biomass for this food chain. [1]

- II Show the correct relationship in the food chain by adding **one** of the following masses to **each** of the feeding levels in **your** pyramid of biomass shown in a(ii)I. [1]

0.18 kg 5137 kg 1.2 kg 43 kg

(b) Use the information on the opposite page and your own knowledge to complete the following diagram. [2]



(c) In which of the following do **all** of the processes **add** carbon dioxide to the air? Underline the correct answer. [1]

- (i) decomposition and respiration and photosynthesis
- (ii) decomposition and respiration and photosynthesis and combustion
- (iii) respiration and combustion and photosynthesis
- (iv) respiration and combustion and decomposition

Question 4.

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Intensive farming methods use very large amounts of chemical pesticides to increase crop yields.

The Western flower thrips (*Frankliniella occidentalis*) is an insect which eats crops, including fruit and vegetables, causing world-wide damage.



A Western flower thrips

Scientists at Swansea University have done research into pest control using bacteria which naturally live only in the thrips. The bacteria affect a gene which controls eating in the thrips. The thrips stops feeding and dies. The bacteria pass naturally between the thrips.

- (a) Use the information above to suggest **one** advantage to the farmer of using this new method of pest control over the use of chemical pesticides. [1]

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- (b) Apart from the use of pesticides state **one other** method farmers use to increase crop yields. [1]

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9. In 1960, a survey of a large pond on a farm found that it contained a rich variety of aquatic insects, snails and four different fish species.

In 1965, the farmer started growing cereal crops on his land. Pellets containing nitrate were spread on the crops several times a year. By 1975, the pond had become overgrown with algae and other aquatic plants and a new survey found that there were very few aquatic insects and no fish species.



Pellets containing nitrate

- (a) State why the farmer spread nitrate on the cereal crops.

[1]

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(b) Use the information opposite and your own knowledge to explain the changes which occurred in the pond. [6 QWC]

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