Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice **May/June 2014**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

7039247184

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, glue or correction fluid.
Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.
DO **NOT** WRITE IN ANY BARCODES

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A**, **B**, **C** and **D**.
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
Electronic calculators may be used.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **16** printed pages.

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1 Growth is a characteristic feature of living organisms.

Which process provides the energy for growth?

A excretion

B movement

C respiration

D sensitivity

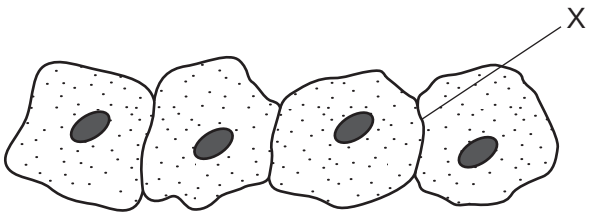
2 The table shows the number of animals collected in a sample from some woodland and the groups to which they belong.

animal group	number in sample
annelids	8
arachnids	10
insects	80
molluscs	40
myriapods	7
nematodes	15

How many arthropods were collected?

A 33 **B** 97 **C** 120 **D** 160

3 The diagram shows some animal cells, as seen under the microscope.



What will be present at X?

A one cell membrane

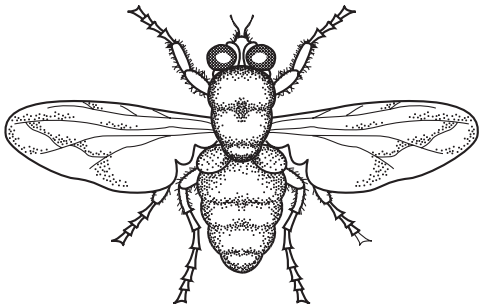
B one cell wall

C two cell membranes

D two cell walls

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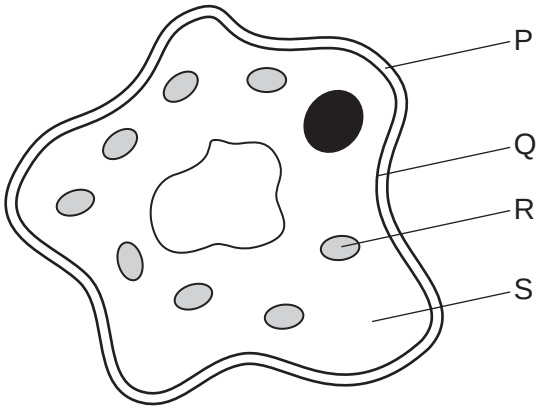
4 The diagram shows an animal.



Use the key to identify the animal.

1	wings present	go to 2
	wings absent	go to 3
2	one pair of wings visible	**A**
	two pairs of wings visible	**B**
3	three pairs of legs	**C**
	four pairs of legs	**D**

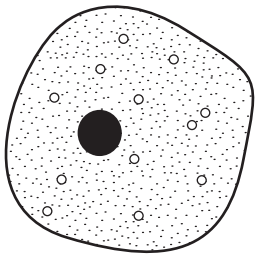
5 The diagram shows a spongy mesophyll cell.



Which structures indicate that this is a plant cell?

A P and S **B** Q and R **C** R and P **D** S and Q

6 The diagram shows a cell.



Which structure is **not** present?

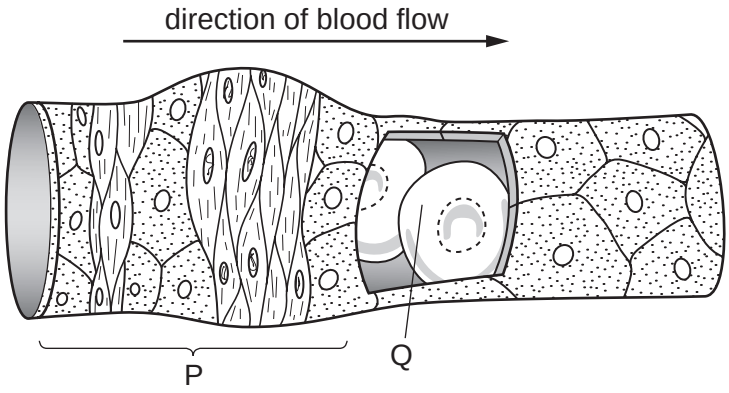
A cell membrane

B cell wall

C cytoplasm

D nucleus

7 The diagram shows blood passing through an arteriole into a capillary. Part of the capillary wall has been cut away to show the blood.



What is the level of organisation of the structures labelled P and Q?

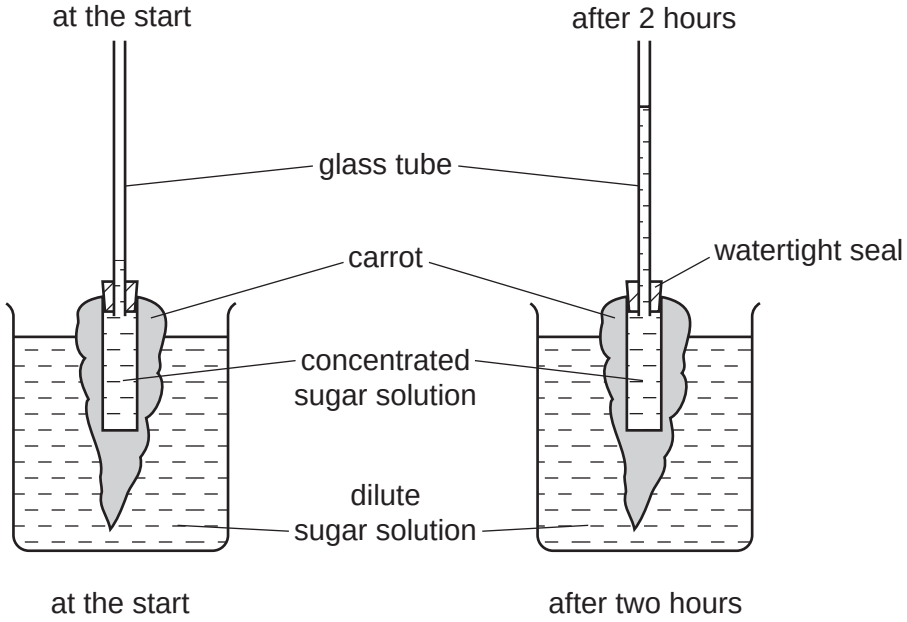
	P	Q
A	organ	cell
B	organ	tissue
C	tissue	cell
D	tissue	tissue

8 Which structures contain a cell nucleus?

	red blood cell	root hair cell	xylem vessel
A	✓	✓	✓
B	✓	✗	✗
C	✗	✓	✗
D	✗	✗	✓

key
✓ = nucleus
✗ = no nucleus

9 The diagram shows the movement of a concentrated sugar solution up a glass tube. The glass tube is connected firmly to a hollowed-out carrot.



Why does the sugar solution in the glass tube rise?

A Sugar molecules move across the carrot tissue into the glass tube.

B Sugar molecules move across the carrot tissue into the beaker.

C Water molecules move across the carrot tissue into the glass tube.

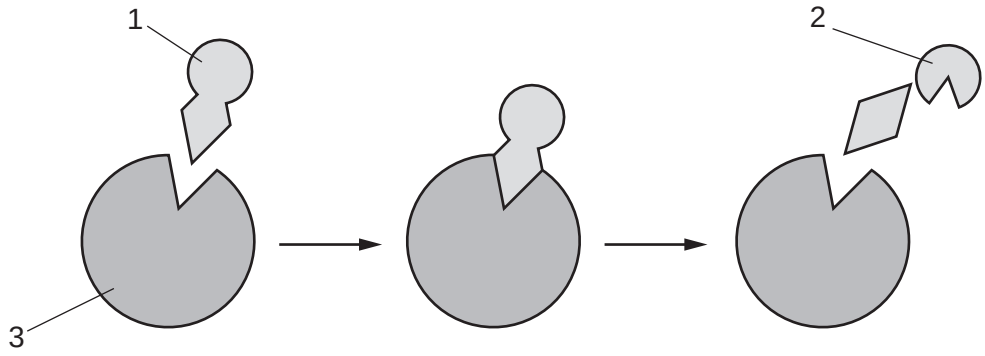
D Water molecules move across the carrot tissue into the beaker.

10 A plant absorbs water and oxygen into its roots.

How are these substances absorbed?

	water	oxygen
A	diffusion	transpiration
B	osmosis	diffusion
C	transpiration	osmosis
D	transpiration	transpiration

11 The diagram shows the lock and key model of enzyme action.



Which is the enzyme and which is the substrate?

	enzyme	substrate
A	1	2
B	1	3
C	3	1
D	3	2

12 The table shows the temperature and pH at which four different enzymes are most active.

Which enzyme is a protease from the stomach?

	optimum temperature / °C	optimum pH
A	25	10
B	37	7
C	40	2
D	50	5

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13 The data show the concentrations of sugar and starch in an onion.

total sugar including reducing sugar / g per 100g	starch / g per 100g
3.7	0

The onion is tested with Benedict's solution and iodine solution.

Which set of results is correct?

	Benedict's solution	iodine solution
A	blue	blue-black
B	blue	brown
C	brick red	blue-black
D	brick red	brown

14 The small intestines of cows are similar in general structure and function to the small intestines of humans.

A disease in cows reduces the number of villi in their small intestines.

The cows lose weight and become weak.

What explains this?

A less amylase produced

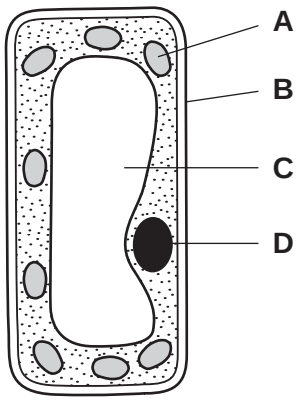
B less peristalsis

C slower absorption of nutrients

D slower digestion of proteins

15 The diagram shows a palisade cell.

In which region is starch stored?



16 Which heart valves are open and which are closed when blood passes out of the right ventricle towards the lungs?

A bicuspid (mitral) valve closed, tricuspid valve open

B bicuspid (mitral) valve open, semi-lunar valve closed

C tricuspid valve closed, semi-lunar valve open

D tricuspid valve open, bicuspid (mitral) valve open

17 A decrease in which factor normally causes transpiration rate to increase?

A humidity

B light intensity

C stomatal opening

D temperature

18 What is the path of water through a plant?

A cortex cells → xylem → stomata → roots

B root hair → xylem → mesophyll cells → stomata

C roots → cortex cells → stomata → phloem

D roots → root hair → stomata → xylem

19 What contains the greatest concentration of lactic acid?

A a bottle of alcoholic drink

B a loaf of freshly baked bread

C muscle cells during vigorous exercise

D yeast cells kept in glucose at 70 °C for 30 minutes

20 Which two statements describe the effects of smoking cigarettes?

1 Cilia beat more quickly.

2 Cilia beat more slowly.

3 Goblet cells stop producing mucus.

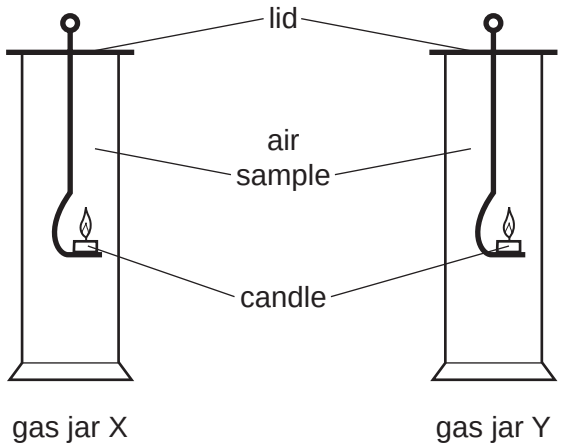
4 Goblet cells produce more mucus.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

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21 A sample of expired air is collected in a gas jar. Another gas jar contains normal atmospheric air.

A lighted candle is placed inside each gas jar as shown. The time taken for each flame to go out is measured. As the candles burn they use up the oxygen available in the jar.



The table shows the results of this experiment.

gas jar	time for candle flame to go out / s
X	15
Y	9

What is an explanation of the difference between the results in jars X and Y?

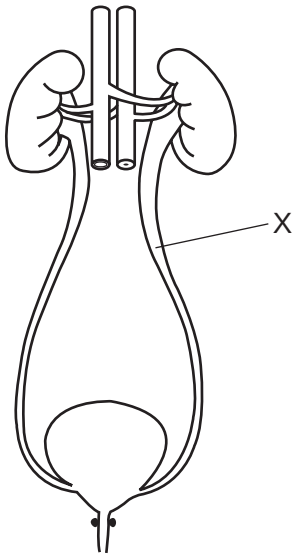
A Jar X contains atmospheric air which has more carbon dioxide.

B Jar X contains expired air which has more carbon dioxide.

C Jar Y contains atmospheric air which has less oxygen.

D Jar Y contains expired air which has less oxygen.

22 The diagram shows the human urinary system.



What is the part labelled X?

A renal artery

B renal vein

C ureter

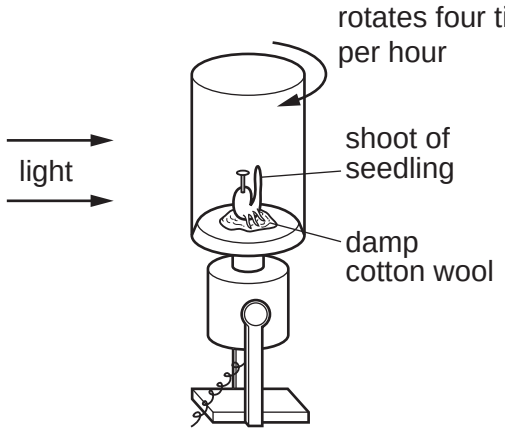
D urethra

23 Which responses occur when a person is too hot?

	sweat produced	shivering	blood vessels supplying skin capillaries
A	no	yes	constricted
B	no	yes	dilated
C	yes	no	constricted
D	yes	no	dilated

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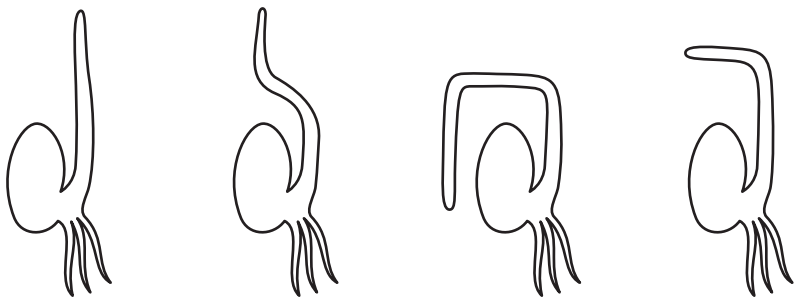
24 The diagram shows the shoot of a seedling, fixed to a rotating platform that is being lit from one side only.



The platform was allowed to rotate for two days, then it was left stationary for a further two days.

Which diagram shows the appearance of the seedling after this four-day period?

A **B** **C** **D**

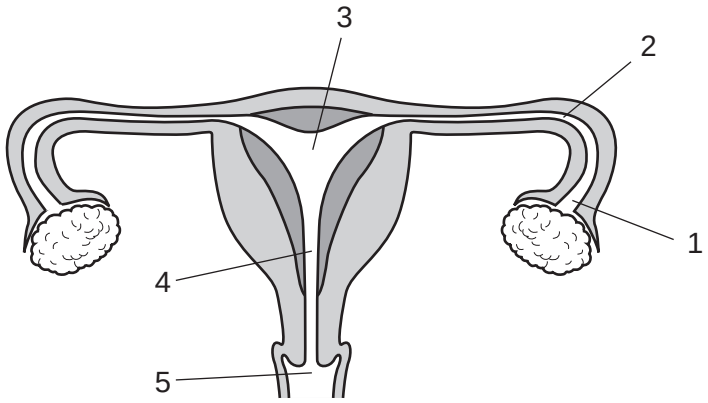


25 How will the composition of a pregnant woman's blood change as it passes through the placenta?

	concentration of dissolved nutrients	concentration of urea
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

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26 The diagram shows the female reproductive system.

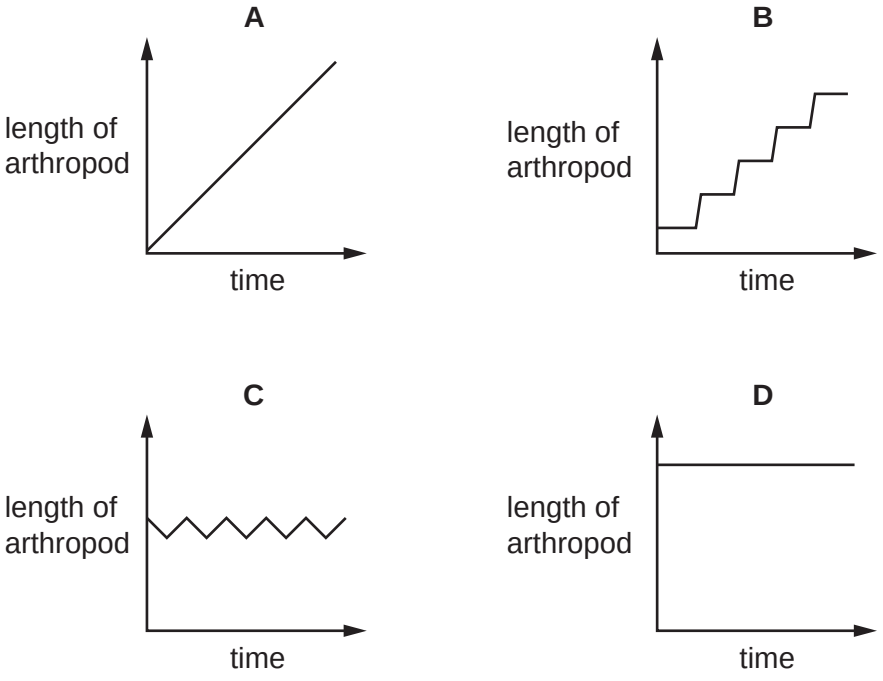


At which labelled points are sperms and ova released?

	sperms	ova
A	3	2
B	4	2
C	5	1
D	5	3

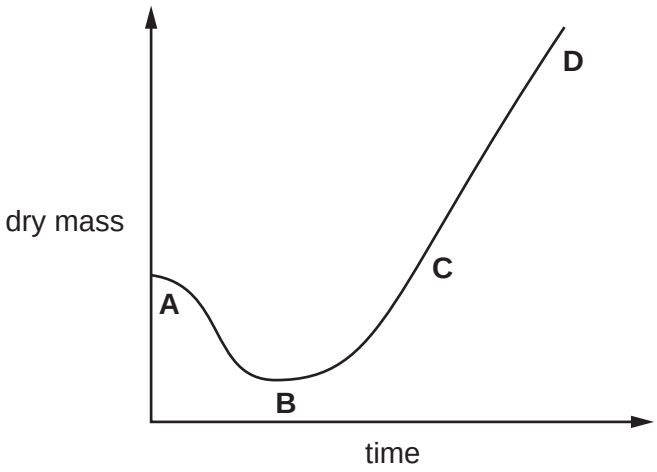
27 In arthropods, growth occurs only after the exoskeleton is shed and before the new one hardens.

Which graph shows a typical growth curve for an arthropod?



28 The graph shows changes in dry mass as a seed germinates and becomes a seedling.

At which point is it respiring and photosynthesising at the same rate?



29 Which statement is true of both chromosomes and genes?

A Each codes for a specific protein.

B Each may be copied and passed on in mitosis.

C Each may be either dominant or recessive.

D Each may exist as two or more alleles.

30 Genetics is the study of

A development of organisms.

B mechanisms of inheritance.

C nuclear division.

D variation between species.

31 What is **unlikely** to be affected by the environment?

A blood group

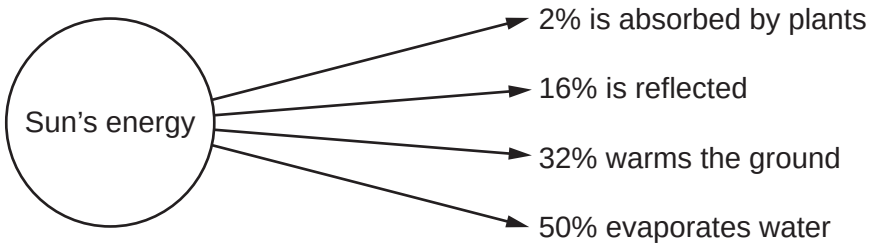
B body mass

C health

D height

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32 The diagram shows what happens to the energy that enters the atmosphere from the Sun.



How much of the Sun's energy is **not** used for photosynthesis?

A less than 2%

B about 32%

C about 66%

D more than 98%

33 The surface waters of the ocean contain a population of microscopic plants.

Which factor would result in **fewer** of these plants?

A an increase in the population of microscopic animals

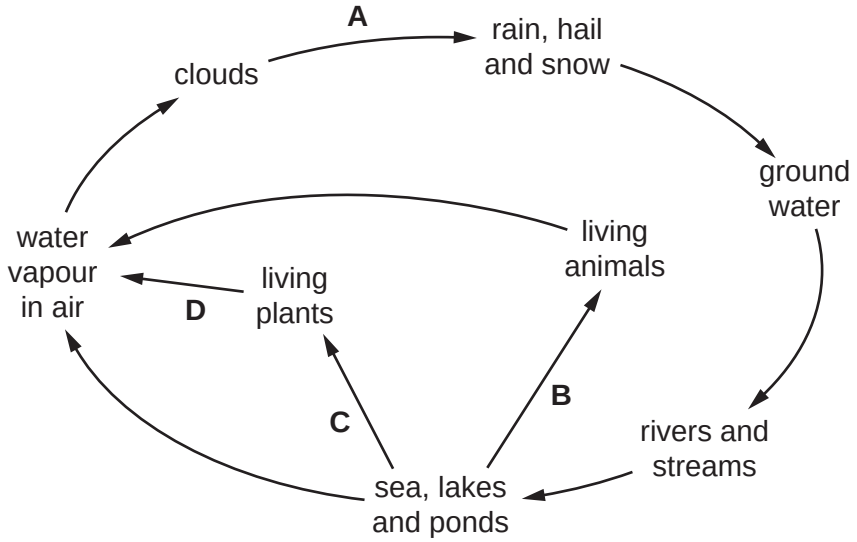
B greater concentration of mineral nutrients

C higher temperature

D more light

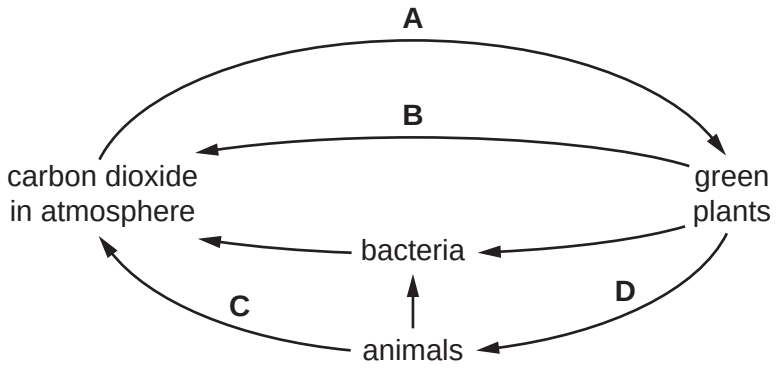
34 The diagram shows the water cycle.

Which letter represents transpiration?



35 The diagram shows part of the carbon cycle.

Which labelled arrow represents photosynthesis?



36 What are products of respiration in green plants?

A glucose and carbon dioxide

B glucose and oxygen

C water and carbon dioxide

D water and oxygen

37 The diagram shows a food chain.

	producers	→	herbivores	→	carnivores	→ top carnivores
trophic level:	1		2		3	4

If the carnivores in trophic level 3 suddenly die out as a result of disease, in which trophic levels will the number of organisms be likely to **decrease**?

A 1 and 2 **B** 1 and 4 **C** 2 and 4 **D** 4 only

38 What is reduced when untreated sewage is released into rivers?

A the amount of nitrate

B the concentration of carbon dioxide

C the concentration of oxygen

D the number of bacteria

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39 The diagram shows a food chain.

A farmer sprays his cabbages with pesticide.

Which organisms does the farmer want to kill?



40 What is an effect of pollution by nuclear fall-out?

A deforestation

B eutrophication

C global warming

D increased mutation rate

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