

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

0610/01

Paper 1 Multiple Choice

May/June 2006

45 minutes

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

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, highlighters, 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.

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.

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



- 1 Which organisms carry out respiration, growth, movement and excretion?
 - A all animals and all plants
 - B animals only
 - C arthropods and flowering plants only
 - D plants only

- 2 Which group includes animals with four legs and a dry scaly skin?
 - A amphibians
 - B birds
 - C mammals
 - D reptiles

- 3 Which structure contains genes?
 - A the cell membrane of an animal cell
 - B the cytoplasm of an animal cell
 - C the nucleus of a plant cell
 - D the vacuole of a plant cell

- 4 The diagram shows a leaf.

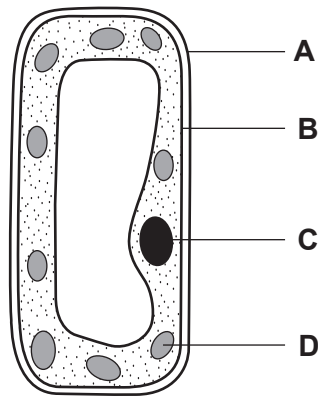


Use the key below. From which plant, **A**, **B**, **C** or **D** was the leaf taken?

- | | | |
|---|--|----------------|
| 1 | leaf has a smooth edge | go to 2 |
| | leaf has a toothed (serrated) edge | go to 3 |
| 2 | leaf has a long stalk (petiole) | plant A |
| | leaf has a short stalk (petiole) | plant B |
| 3 | leaf is longer than it is wide | plant C |
| | leaf is wider than it is long | plant D |

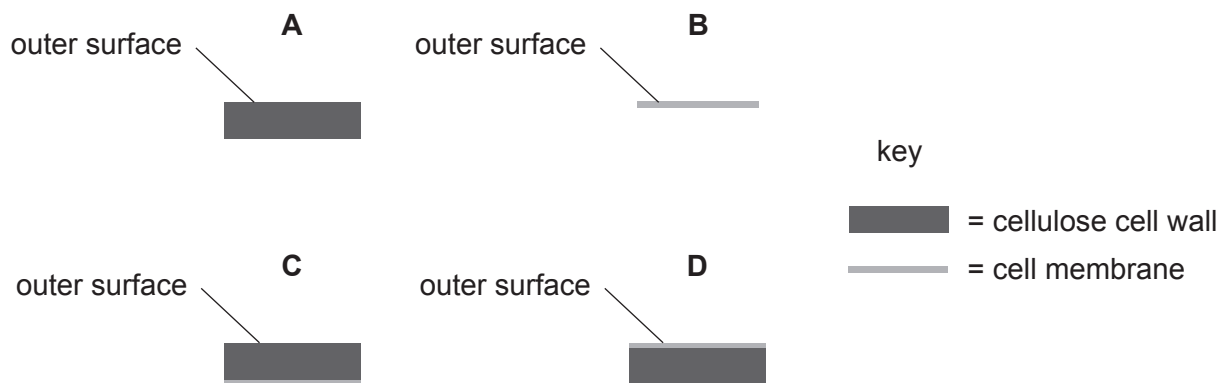
- 5 The diagram shows a plant cell.

In which part of the cell do carbon dioxide and water combine to form glucose?

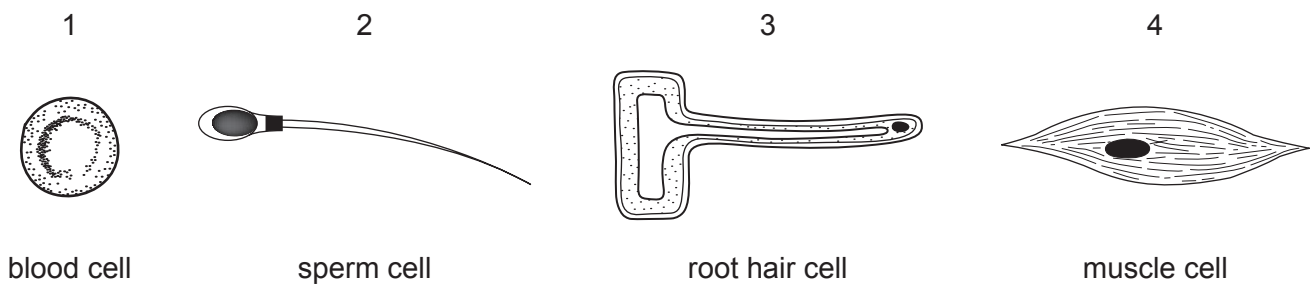


- 6 The diagrams show the outer layers of cells.

Which is correct for an animal cell?



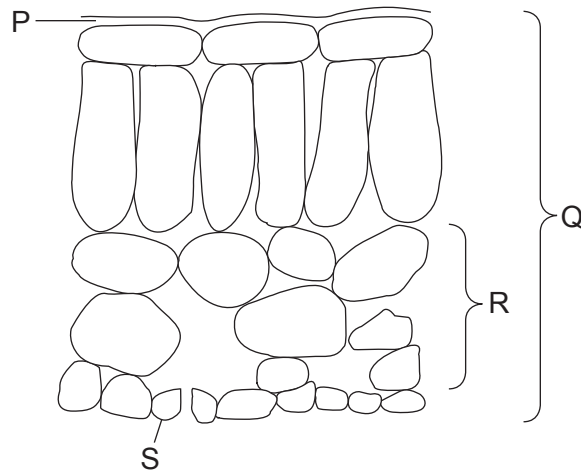
- 7 The diagrams show four different cells (not drawn to scale).



Which cells provide a large surface area for absorption?

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

8 The diagram shows a section through a leaf.



Which structure is an organ and which structure is a tissue?

	organ	tissue
A	P	S
B	Q	R
C	R	P
D	S	Q

9 Osmosis is defined as the diffusion of water molecules

- A** down their concentration gradient through a partially permeable membrane.
- B** down their concentration gradient through a permeable membrane.
- C** up their concentration gradient through a partially permeable membrane.
- D** up their concentration gradient through a permeable membrane.

10 Which structure is adapted for the diffusion of gases?

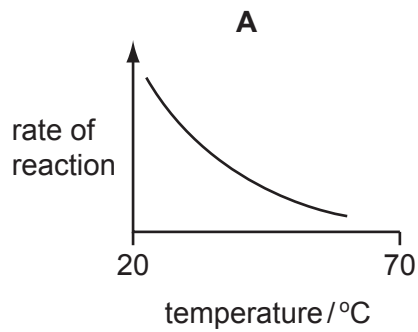
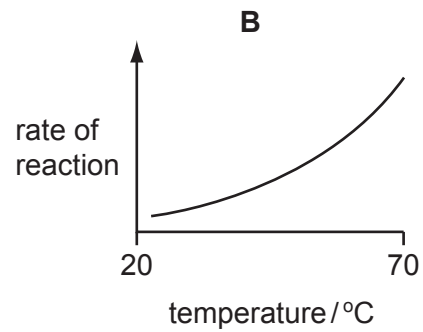
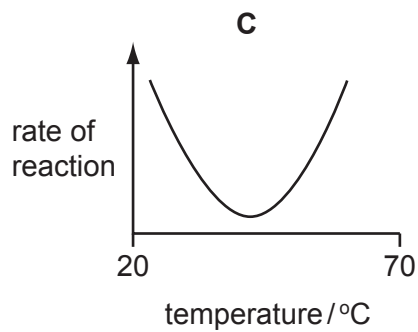
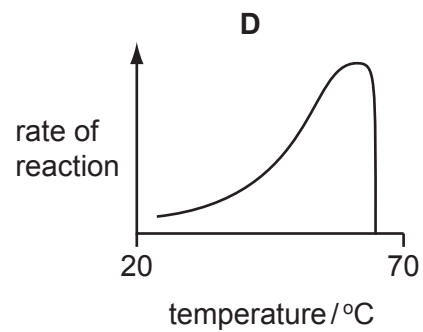
- A** alveolus
- B** diaphragm
- C** oesophagus
- D** trachea

- 11 Starch is digested by amylase in the mouth, but it is not digested in the stomach.

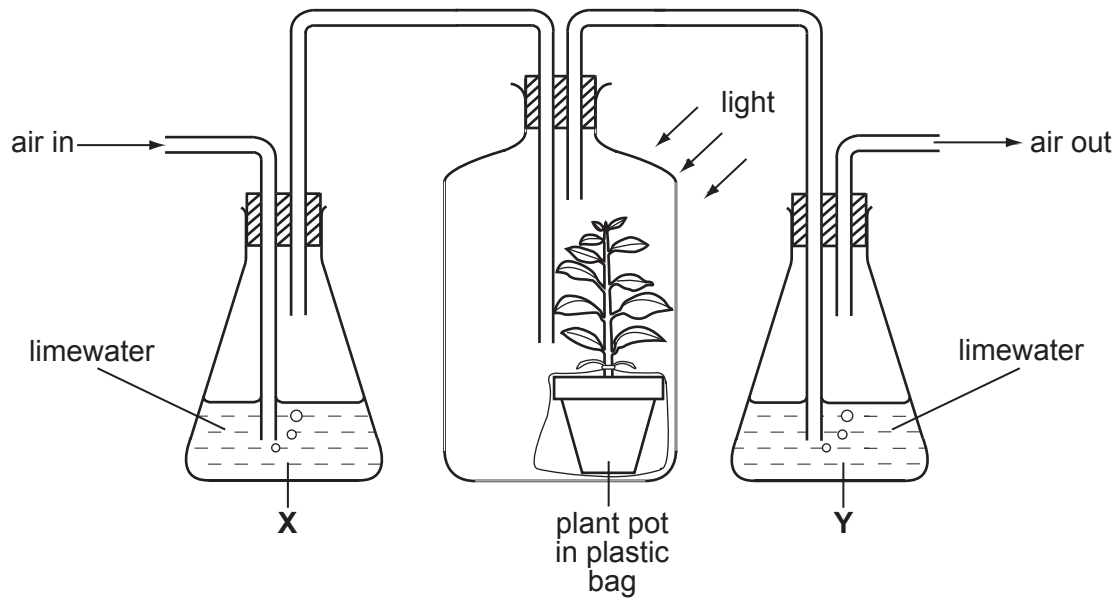
What is the reason for this?

- A All starch digestion is completed in the mouth.
- B The pH in the stomach is not suitable for the amylase to work.
- C The starch does not stay in the stomach long enough to be digested.
- D The temperature in the stomach is not suitable for the amylase to work.

- 12 Which graph shows the effect of temperature on the activity of a human digestive enzyme?



- 13** The apparatus shown in the diagram is used to investigate the effect of a green plant on carbon dioxide in the air.



Limewater goes cloudy if carbon dioxide is bubbled through it.

What happens to the limewater in **X** and in **Y**?

	X	Y
A	goes cloudy	goes cloudy
B	goes cloudy	stays clear
C	stays clear	goes cloudy
D	stays clear	stays clear

- 14** Which substance is transported by xylem vessels?

- A** carbon dioxide
- B** oxygen
- C** sugar
- D** water

- 15 How is the rate of transpiration affected by decreasing temperature and by decreasing light intensity?

	decreasing temperature	decreasing light intensity
A	slower	slower
B	slower	faster
C	faster	slower
D	faster	faster

- 16 Poor nutrition can lead to a condition called rickets in which bones fail to develop properly.

The table shows some minerals and vitamins present in four foods.

Which food would be best for a child who has rickets?

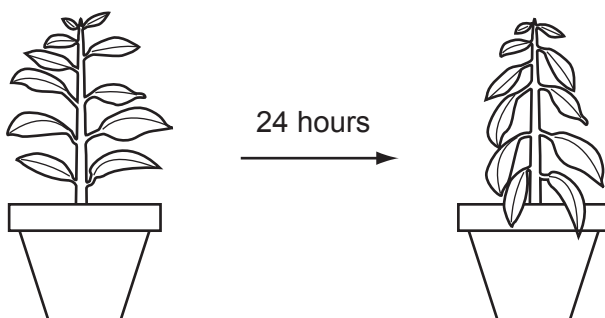
	calcium	iron	vitamin C	vitamin D
A	✓	x	✓	x
B	✓	x	x	✓
C	x	✓	✓	x
D	x	✓	x	✓

key

✓ = substance present

x = substance absent

- 17 The diagram shows a potted plant and the same plant 24 hours later.



What causes the change in the appearance of the plant?

- A** Water moves from the leaves to stem.
- B** Water loss is greater than water uptake.
- C** Water uptake is equal to water loss.
- D** Water uptake is greater than water loss.

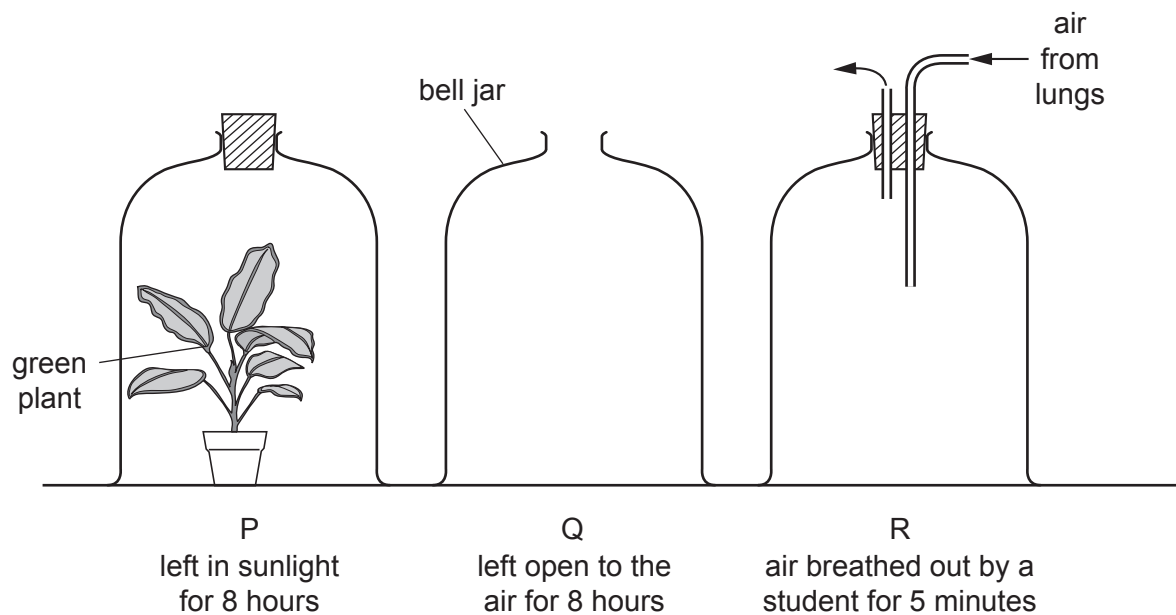
18 Which shows the functions of the parts of the blood?

	red blood cells	white blood cells	platelets
A	antibody production	clotting	oxygen transport
B	clotting	oxygen transport	antibody production
C	oxygen transport	antibody production	clotting
D	oxygen transport	clotting	antibody production

19 Which word equation represents anaerobic respiration in human muscle?

- A** glucose $\rightarrow$ carbon dioxide + ethanol (alcohol)
B glucose $\rightarrow$ carbon dioxide + lactic acid
C glucose $\rightarrow$ ethanol (alcohol)
D glucose $\rightarrow$ lactic acid

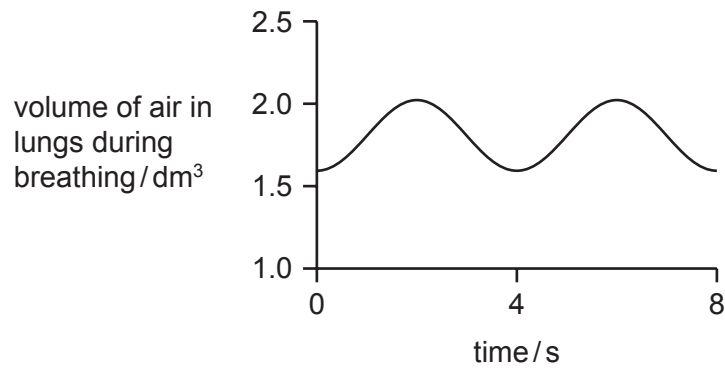
20 In an experiment three glass bell jars were set up as shown in the diagram.



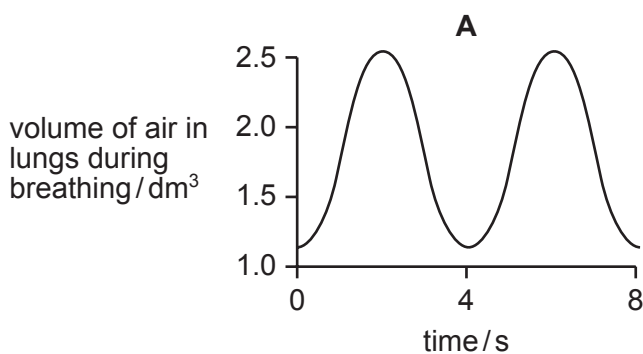
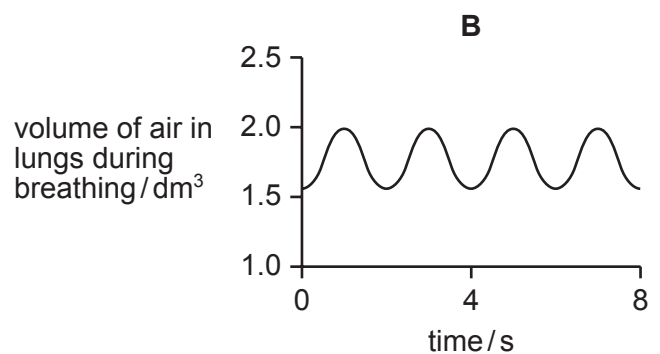
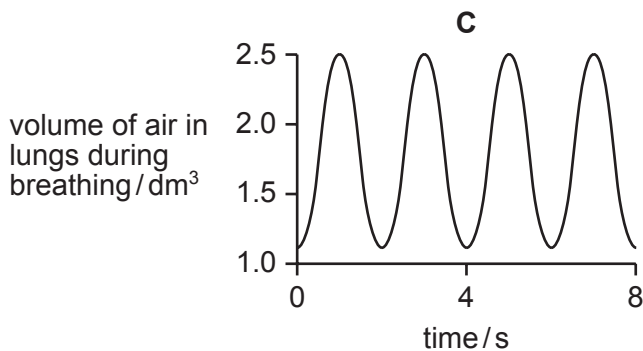
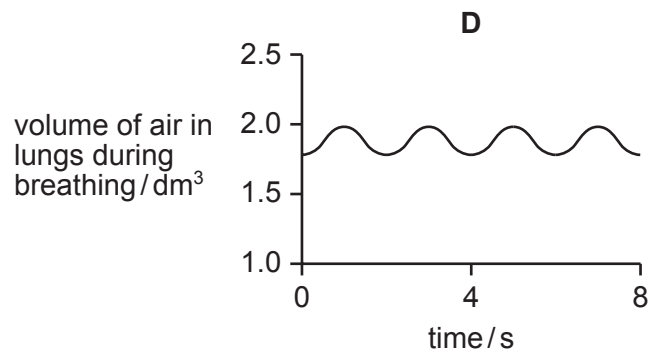
At the end of the experiment, which bell jar has the most oxygen and which has the least?

	most oxygen	least oxygen
A	P	Q
B	P	R
C	Q	P
D	R	P

21 The graph shows the rate and depth of breathing in a person before exercise.



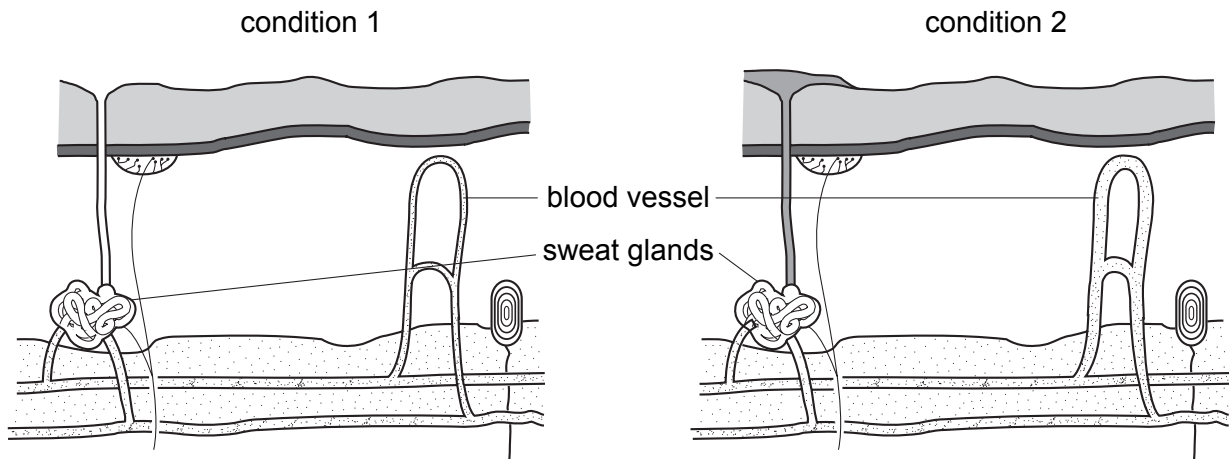
Which graph shows the rate and depth of breathing of the same person immediately after a period of exercise?



22 In which organ is urea made and by which organ is it removed from the blood?

	where made	where removed
A	kidney	kidney
B	kidney	liver
C	liver	kidney
D	liver	liver

23 The diagram shows structures within human skin under two different external conditions.



What are external conditions 1 and 2?

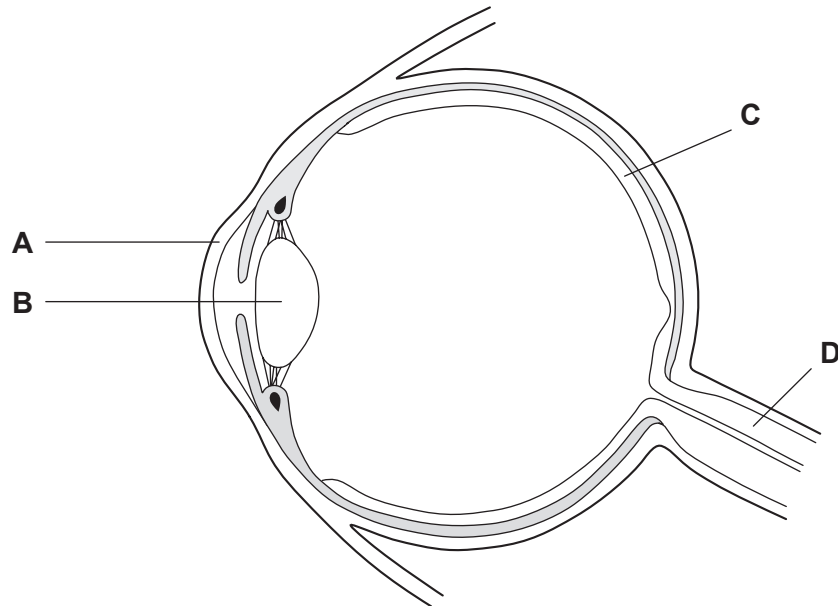
	condition 1	condition 2
A	cool	hot
B	cool	cool
C	hot	cool
D	hot	hot

24 Which of these contains relay neurones?

- A** effector
- B** receptor
- C** spinal cord
- D** stimulus

25 The diagram shows a section through an eye.

Which structure contains cells that are sensitive to light?



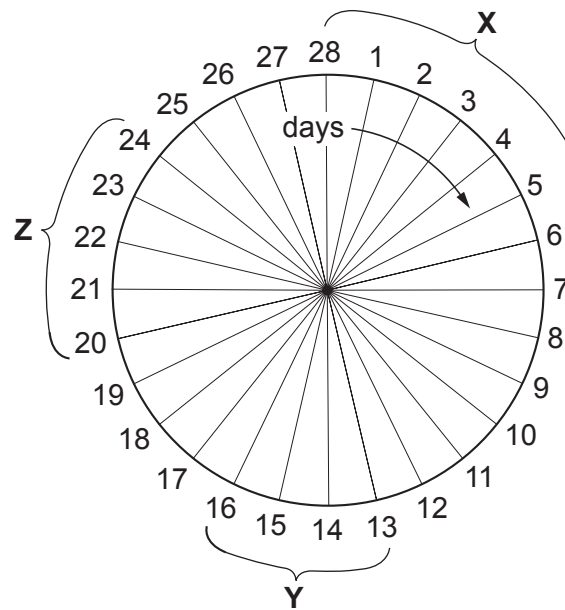
26 Which part of a seed grows into the root system of a plant?

- A cotyledon
- B plumule
- C radicle
- D testa (seed coat)

27 What must **always** be present for seeds to germinate?

- A chlorophyll
- B light
- C soil
- D water

28 The diagram represents the menstrual cycle.

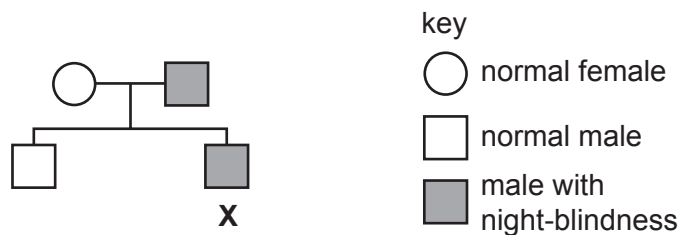


Which events may occur at **X**, **Y** and **Z**?

	X	Y	Z
A	implantation	ovulation	menstruation
B	menstruation	ovulation	implantation
C	ovulation	implantation	menstruation
D	ovulation	menstruation	implantation

29 Night-blindness is an inherited condition, caused by a dominant allele.

The chart shows how this condition was passed on in one family.

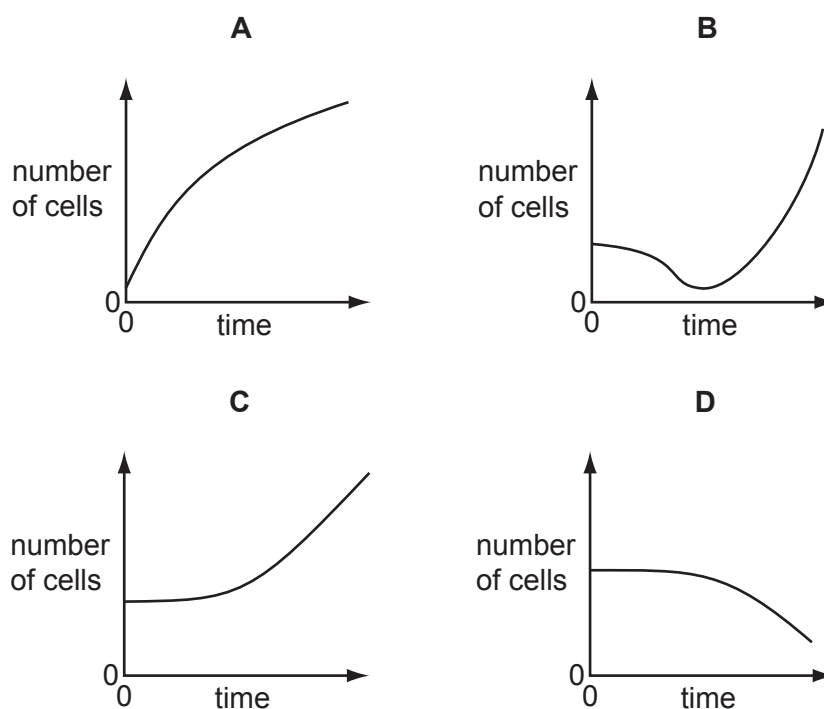


Person **X** marries someone with normal sight.

What is the chance that their first child will have night-blindness?

- A** 0% **B** 50% **C** 75% **D** 100%

- 30 Which graph shows the change in the number of cells from the start of germination in a seed until the seedling starts to photosynthesise?



- 31 Why does meiosis occur during the formation of gametes?

- A** It allows the number of gametes to be doubled.
- B** It prevents asexual reproduction occurring in the life cycle.
- C** It prevents variations appearing in the phenotype.
- D** It produces haploid gametes in preparation for fertilisation.

- 32 The diagram shows the genotypes of two parent plants and three of their offspring for a characteristic that is controlled by a dominant allele.

<i>parents</i>	plant 1 Rr	plant 2 Rr	
<i>offspring</i>	plant 3 RR	plant 4 Rr	plant 5 rr

Which of the plants have the same phenotype?

- A** 1, 2 and 4 only
- B** 1, 2, 3 and 4
- C** 3 and 5 only
- D** 3, 4 and 5

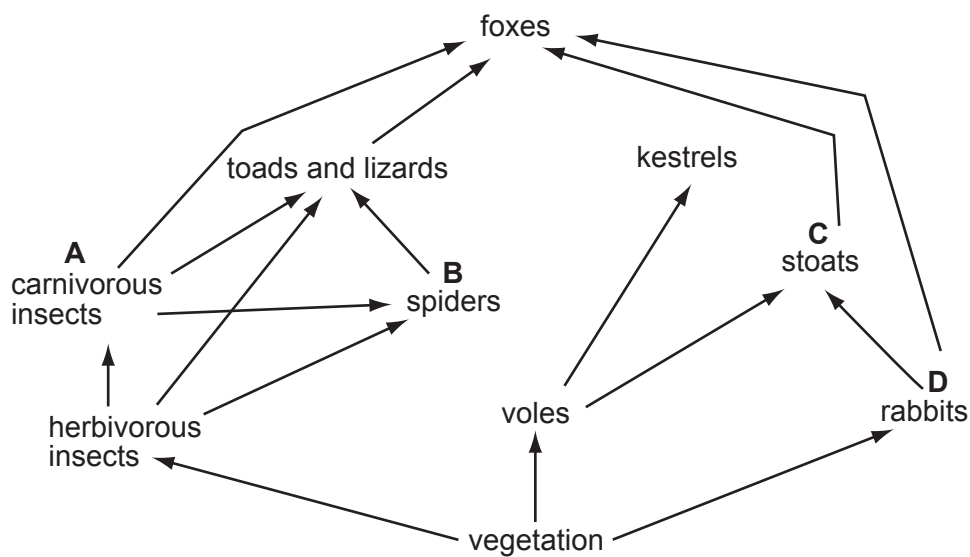
33 In the ecosystem of a tropical rainforest, the producers obtain energy from the

- A** consumers.
- B** decomposers.
- C** rotting leaves.
- D** sunlight.

34 A generalised food chain may be shown as follows.

producer → primary consumer → secondary consumer → tertiary consumer

Which labelled organisms in the food web below are both secondary and tertiary consumers?

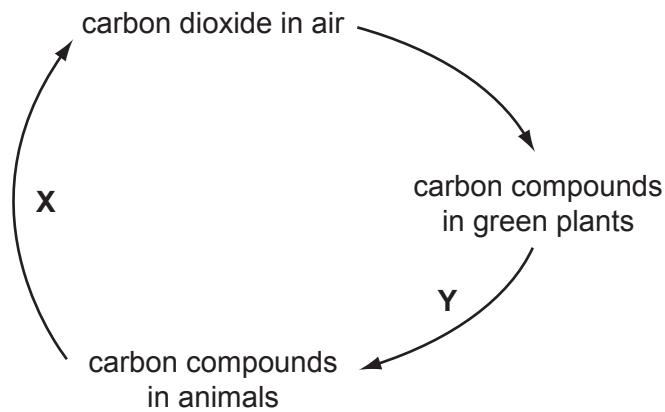


35 The activity of decomposers returns substances to the atmosphere.

Which products of decomposition enter the atmosphere?

- A** carbon dioxide and nitrogen
- B** carbon dioxide and water
- C** oxygen and nitrogen
- D** oxygen and water

36 The diagram represents part of the carbon cycle.



What processes are represented by **X** and **Y**?

	X	Y
A	combustion	photosynthesis
B	photosynthesis	respiration
C	respiration	excretion
D	excretion	nutrition

37 Which process is part of both the carbon cycle and the water cycle?

- A** evaporation
- B** photosynthesis
- C** translocation
- D** transpiration

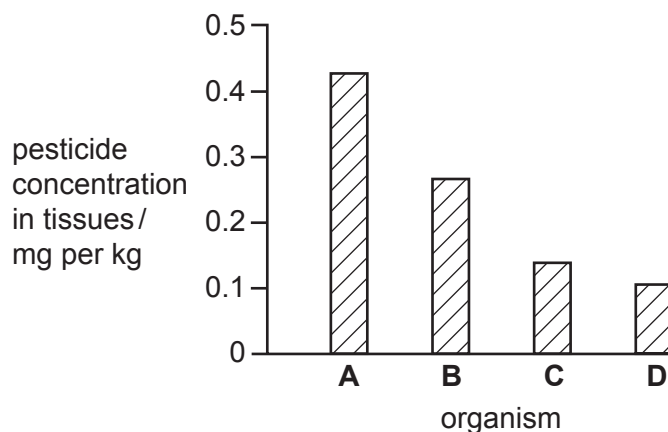
38 Which factor has had the least effect on the rate of growth of the population of the world during the last 200 years?

- A** the use of birth control
- B** improved agriculture
- C** the elimination of predators
- D** an improvement in medicines

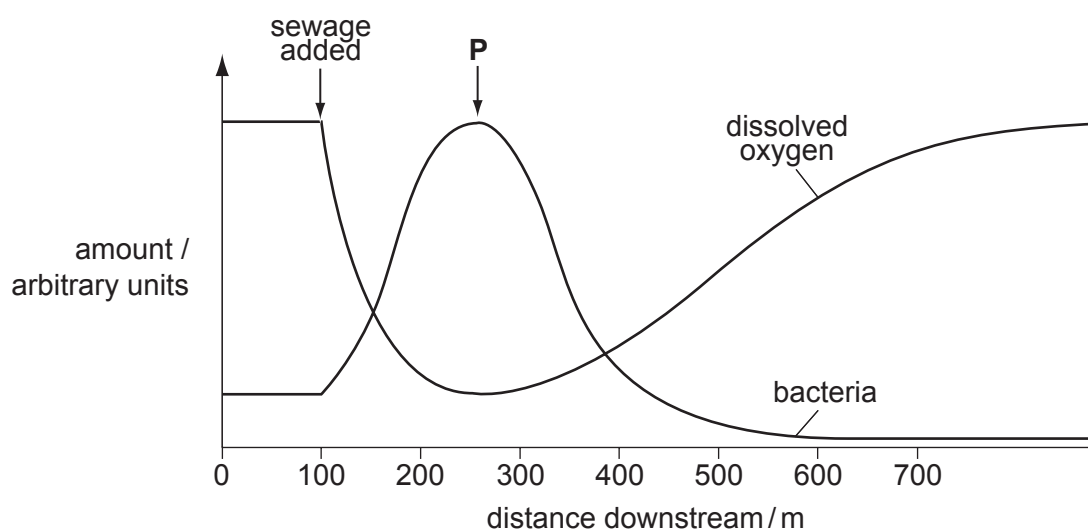
- 39 The concentration of a pesticide in the tissues of the organisms in the following food chain was measured.

plants → small fish → large fish → bird of prey

Which organism on the bar chart is the large fish?



- 40 The graph shows how oxygen concentration and numbers of bacteria change when sewage is added to a river.



What describes the oxygen concentration and the numbers of bacteria between the point at which sewage is added and point P?

- A Oxygen concentration and numbers of bacteria stay the same.
- B Oxygen concentration decreases and numbers of bacteria increase.
- C Oxygen concentration increases and numbers of bacteria decrease.
- D Oxygen concentration remains the same and numbers of bacteria increase.