

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/01**

Paper 1 Multiple Choice

October/November 2003

**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 **17** printed pages and **3** blank pages.



## 2

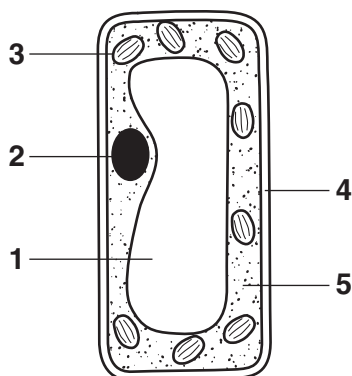
1 Which organisms carry out respiration, growth, movement and excretion?

- A all animals and all plants
- B animals only
- C plants only
- D some animals and some plants

2 Which characteristics do fish have?

	backbone	scales	hair
<b>A</b>	x	x	✓
<b>B</b>	x	✓	x
<b>C</b>	✓	✓	x
<b>D</b>	✓	x	✓

Use this diagram, which shows the structure of a palisade cell, to answer questions 3 and 4.



3 Which features are also found in a liver cell?

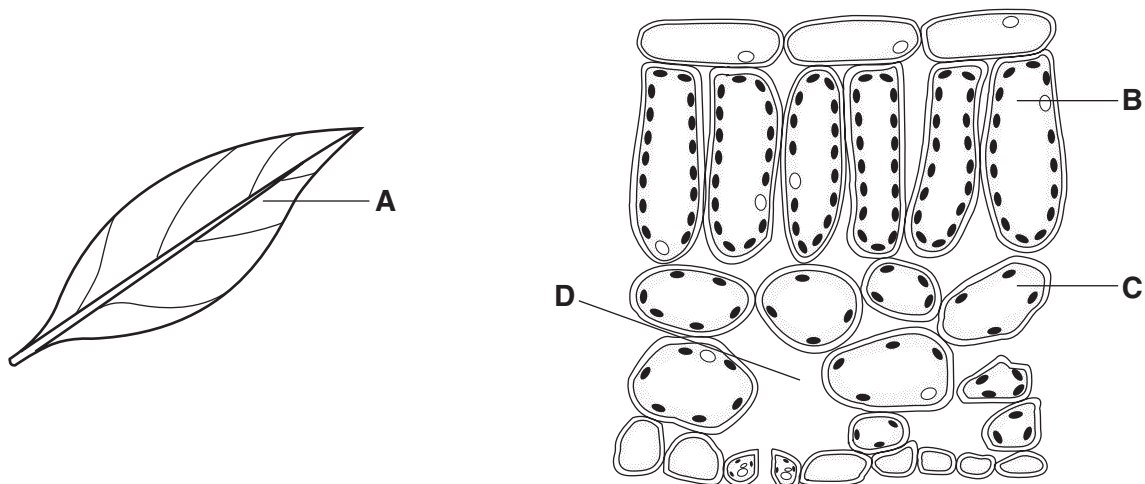
- A 1 and 2
- B 2 and 5
- C 3 and 4
- D 4 and 5

4 In which part does photosynthesis take place?

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

- 5 The diagrams show a leaf and a section through part of the same leaf.

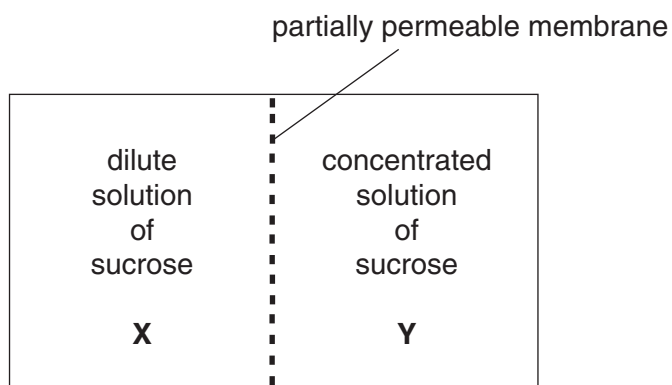
Which label indicates an organ?



- 6 Which features are shown by a red blood cell?

	shape	nucleus
<b>A</b>	disc	absent
<b>B</b>	disc	lobed
<b>C</b>	irregular	absent
<b>D</b>	irregular	lobed

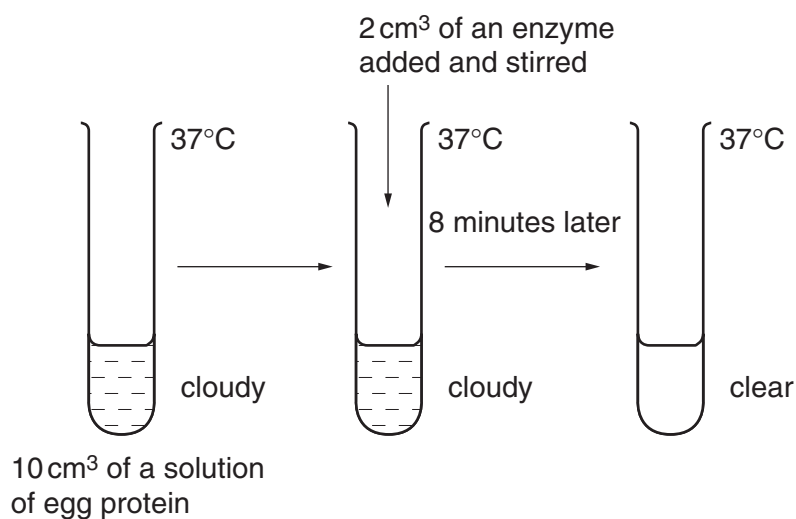
- 7 The diagram shows two solutions that are separated by a partially permeable membrane.



In which direction will most water molecules move?

- A** from X to Y, against their concentration gradient
- B** from X to Y, down their concentration gradient
- C** from Y to X, against their concentration gradient
- D** from Y to X, down their concentration gradient

- 8 By which process do oxygen molecules move down a concentration gradient?
- A breathing
  - B diffusion
  - C osmosis
  - D respiration
- 9 What is the chemical nature of an enzyme?
- A an amino acid
  - B a carbohydrate
  - C a protein
  - D a vitamin
- 10 The diagram shows an experiment using an enzyme.



The suspension might have become clear more quickly if

- A more egg protein had been used.
- B the mixture had not been stirred.
- C the pH of the mixture had been changed.
- D the temperature had been raised to 75 °C.

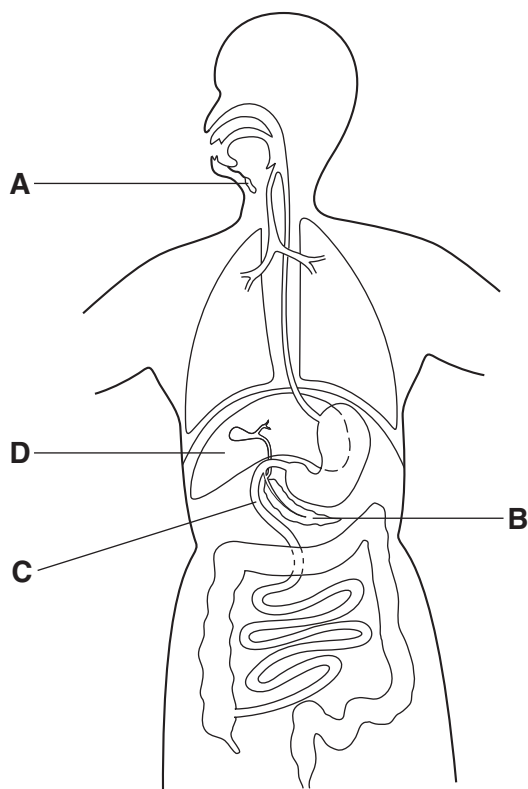
11 Glycogen, protein and starch are all large molecules made from smaller basic units.

Which basic units form these molecules?

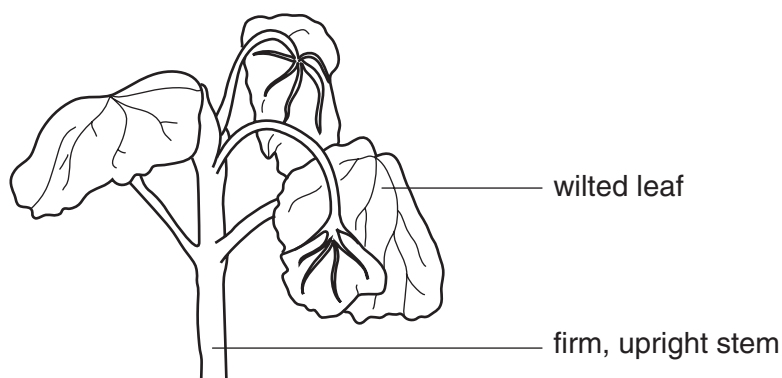
	glycogen	protein	starch
<b>A</b>	amino acids	simple sugars	fatty acids
<b>B</b>	fatty acids	simple sugars	simple sugars
<b>C</b>	simple sugars	amino acids	simple sugars
<b>D</b>	simple sugars	fatty acids	amino acids

12 The diagram shows the human alimentary canal.

Which structure does **not** secrete digestive enzymes?



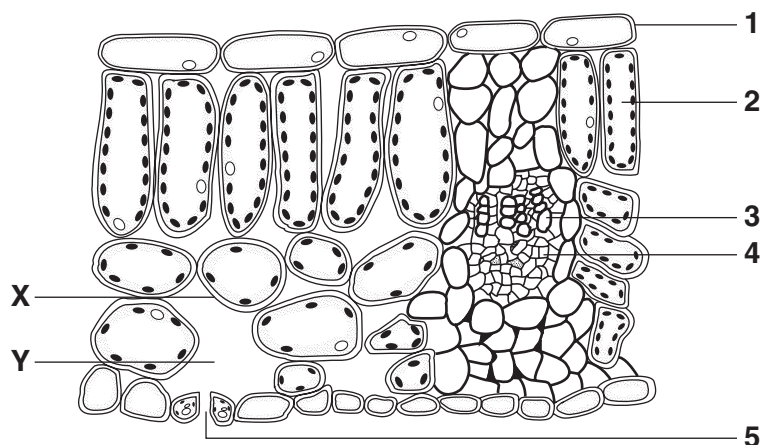
- 13 The diagram shows part of a plant with a woody stem, which does not have enough water. The leaves have wilted, but the stem is still firm and upright.



Why have the leaves wilted?

- A Photosynthesis cannot take place without water.
- B The cells in the leaves have lost their internal pressure.
- C The humidity in the air is too high.
- D The lignin in the leaves has become soft.

Use this diagram, which shows a section through a leaf, to answer questions 14 and 15.



- 14 What takes place in the structures indicated?

	transport of water to the cells of the leaf	use of water to make sugar	transport of sugar to the stem and root
A	4	1	5
B	3	2	4
C	3	1	4
D	4	2	5

15 The leaf is losing water to the atmosphere.

What processes are occurring at **X** and **Y**?

	<b>X</b>	<b>Y</b>
<b>A</b>	diffusion	evaporation
<b>B</b>	evaporation	diffusion
<b>C</b>	osmosis	transpiration
<b>D</b>	transpiration	osmosis

16 The table shows the deficiency symptoms that result from a lack of some substances in the human diet.

Which symptom results from a deficiency in iron?

	deficiency symptom
<b>A</b>	anaemia (haemoglobin deficiency)
<b>B</b>	rickets
<b>C</b>	scurvy
<b>D</b>	soft teeth

17 In an experiment to compare water loss, four similar leaves are treated with petroleum jelly (Vaseline) and left on a table for one hour.

leaf 1 upper surface only covered

leaf 2 lower surface only covered

leaf 3 both surfaces covered

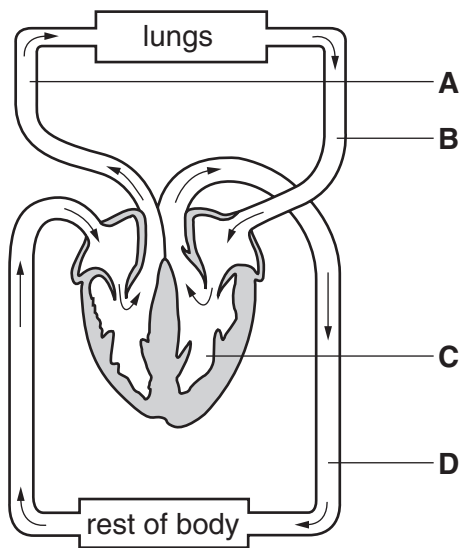
leaf 4 neither surface covered

Which shows the water loss from the leaves?

	water loss			
	most	→		least
<b>A</b>	1	4	3	2
<b>B</b>	1	2	4	3
<b>C</b>	4	3	1	2
<b>D</b>	4	1	2	3

18 The diagram shows part of the human circulatory system.

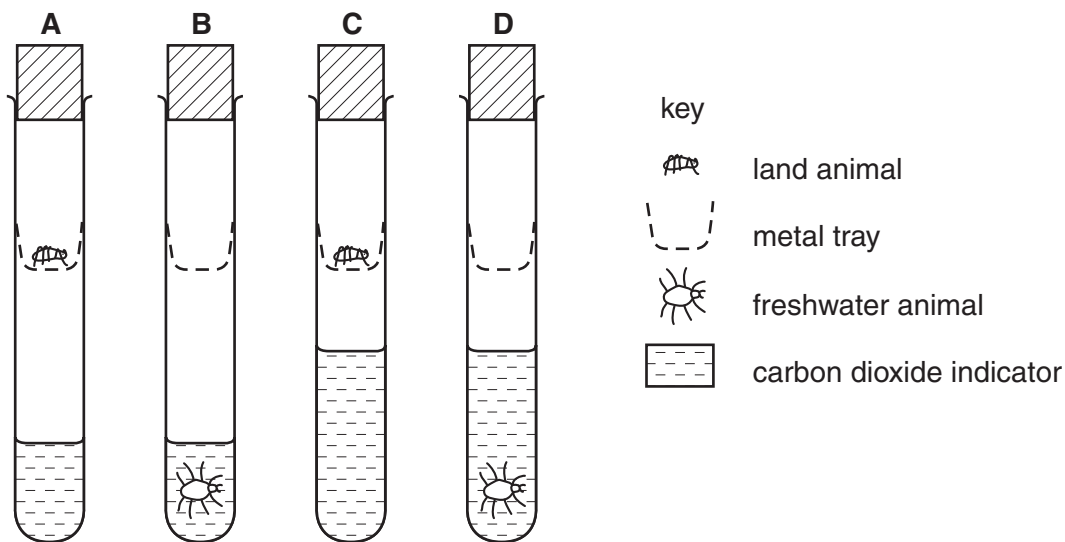
Which part carries oxygenated blood at low pressure?



19 The diagram shows an experiment to find out the rate at which small land animals and freshwater animals give off carbon dioxide during respiration.

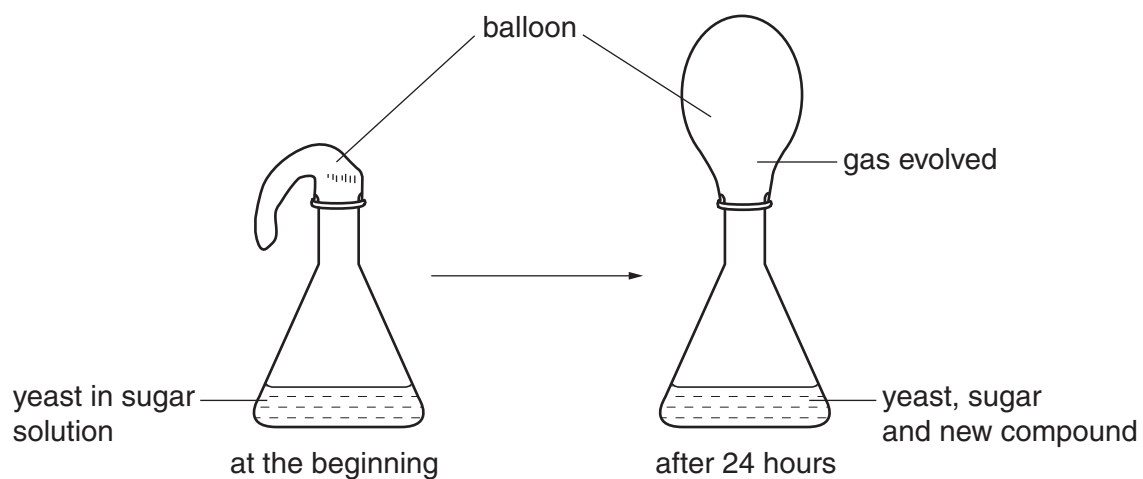
All the tubes were kept at the same temperature and all animals were equally active.

In which tube would the indicator be the first to change colour?





20 The diagram shows an experiment to investigate the respiration of yeast.

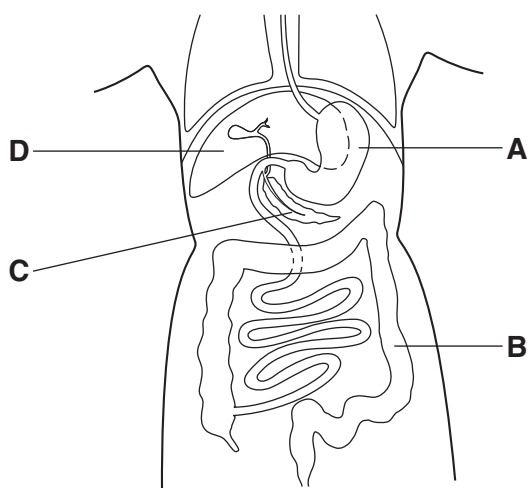


Which gas is evolved and which new compound is present?

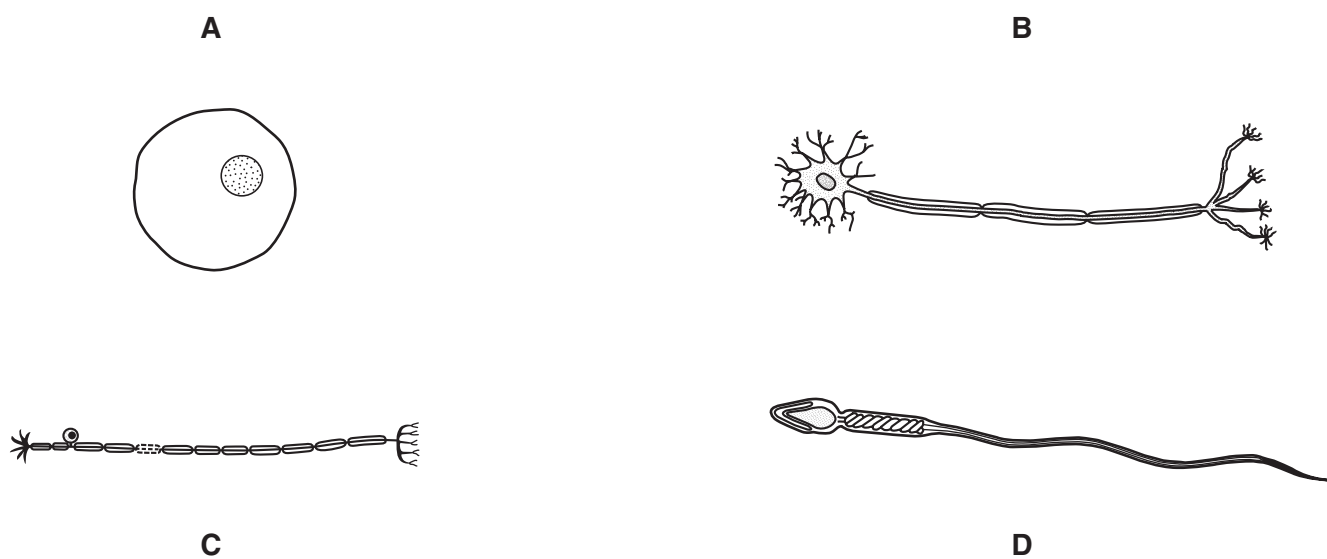
	gas evolved	new compound
<b>A</b>	carbon dioxide	ethanol
<b>B</b>	carbon dioxide	lactic acid
<b>C</b>	oxygen	ethanol
<b>D</b>	oxygen	lactic acid

21 The diagram shows some organs in the human body.

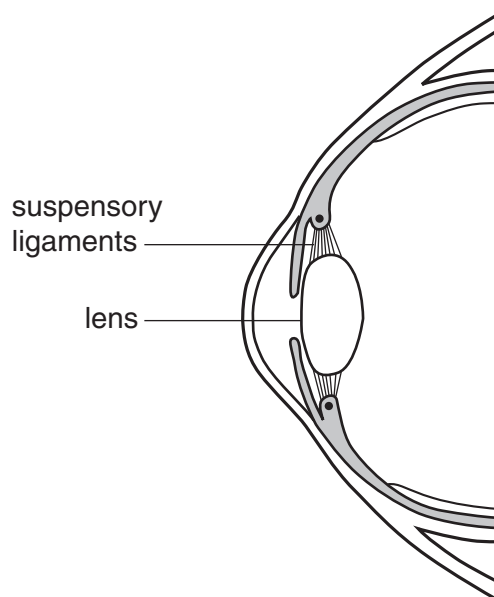
In which part are amino acids broken down to urea?



22 Which diagram shows a motor neurone?



23 The diagram shows a section through part of the human eye.

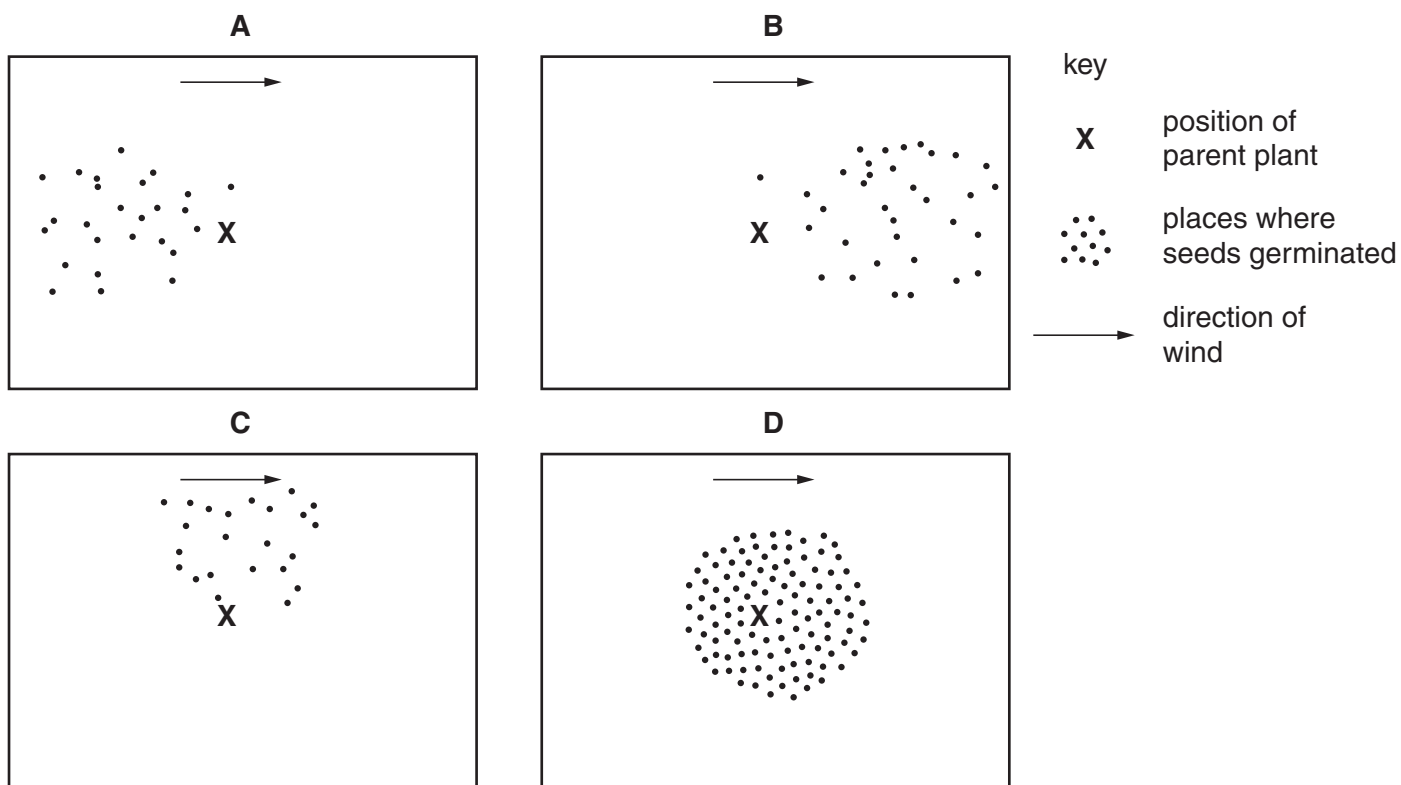


When a person looks at a close object, which of the following takes place?

	suspensory ligaments	lens
<b>A</b>	slacken	becomes fatter
<b>B</b>	slacken	becomes thinner
<b>C</b>	tighten	becomes fatter
<b>D</b>	tighten	becomes thinner

- 24 The maps show the positions of different parent plants and the places where their seeds germinated during the next year.

Which plant had its seeds dispersed by the wind?

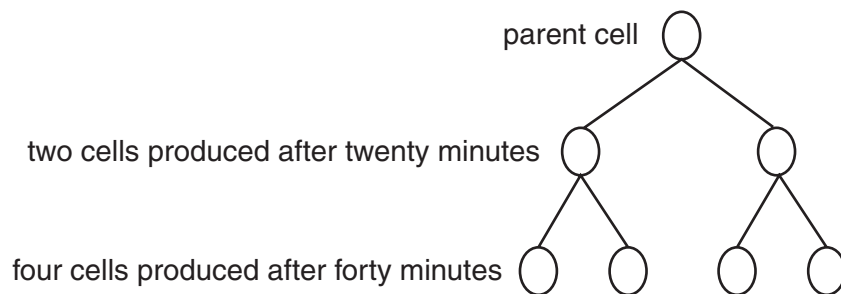


- 25 Flowers show adaptations for wind or insect pollination.

Which of these adaptations are found in wind-pollinated flowers?

	anther	nectary	petals	stigma
<b>A</b>	firmly attached	present	coloured	inside flower
<b>B</b>	firmly attached	present	green	outside flower
<b>C</b>	loosely attached	absent	coloured	inside flower
<b>D</b>	loosely attached	absent	green	outside flower

- 26 The diagram represents a bacterium reproducing.

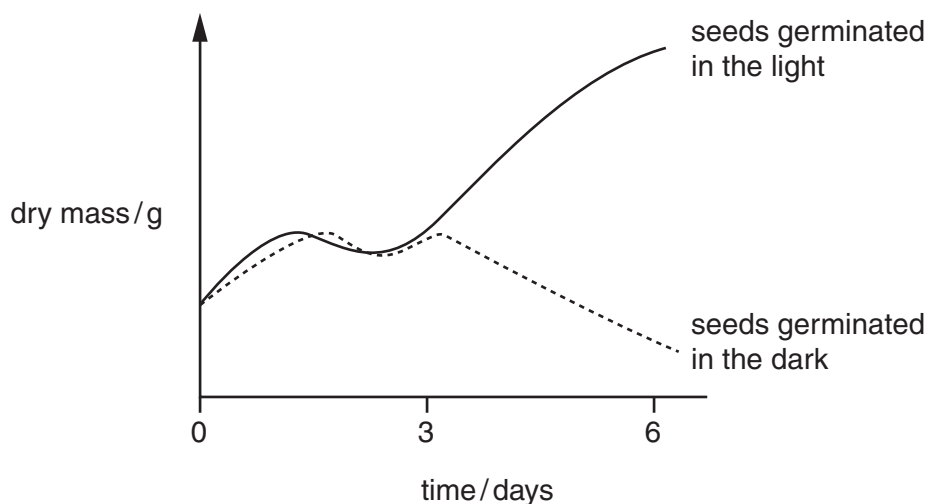


Why is this described as asexual reproduction?

- A Gametes are produced.
  - B It is very quick.
  - C It produces a lot of new cells.
  - D Only one parent is needed.
- 27 Which of the following may be defined as 'an increase in dry mass'?

- A growth
- B nutrition
- C reproduction
- D respiration

- 28 The graph shows the changes in the dry masses of two similar samples of seeds from the start of germination.



What causes the change in dry mass after day 3 of the seeds germinated in the light?

- A All the stored food has been used up.
- B A lot of water has been absorbed.
- C Photosynthesis has begun.
- D The respiration rate has increased.

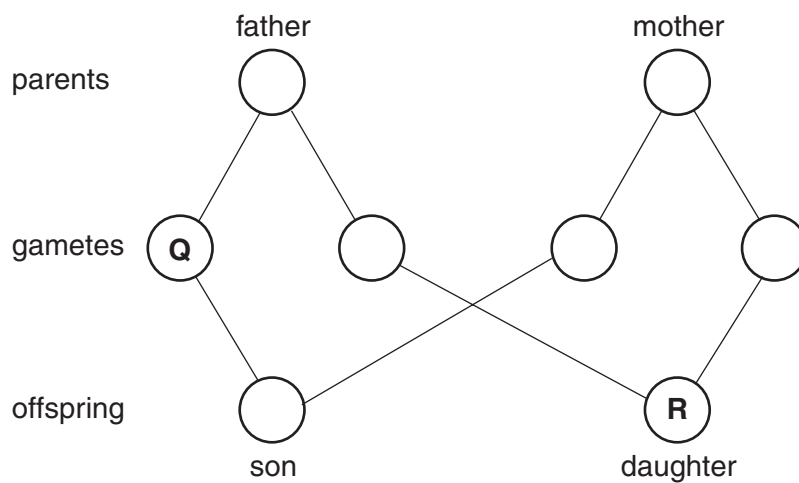
29 Which terms describe the nucleus in the gametes and in the zygote of a human?

	gametes	zygote
<b>A</b>	diploid	diploid
<b>B</b>	diploid	haploid
<b>C</b>	haploid	diploid
<b>D</b>	haploid	haploid

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

- A** blood group
- B** body mass
- C** health
- D** height

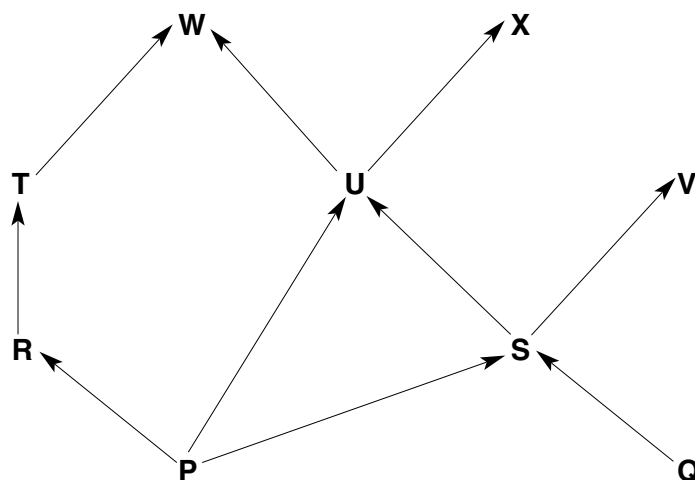
31 The diagram shows the fusion of gametes to produce a son and a daughter.



What are the sex chromosomes in gamete **Q** and daughter **R**?

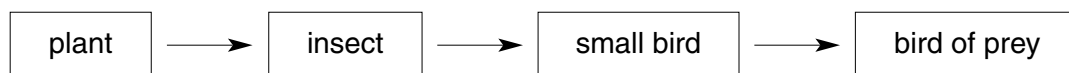
	<b>Q</b>	<b>R</b>
<b>A</b>	X	XX
<b>B</b>	X	XY
<b>C</b>	Y	XX
<b>D</b>	Y	XY

- 32 The diagram represents a food web. The letters represent organisms and the arrows show the direction of the flow of energy.



Which statement is correct?

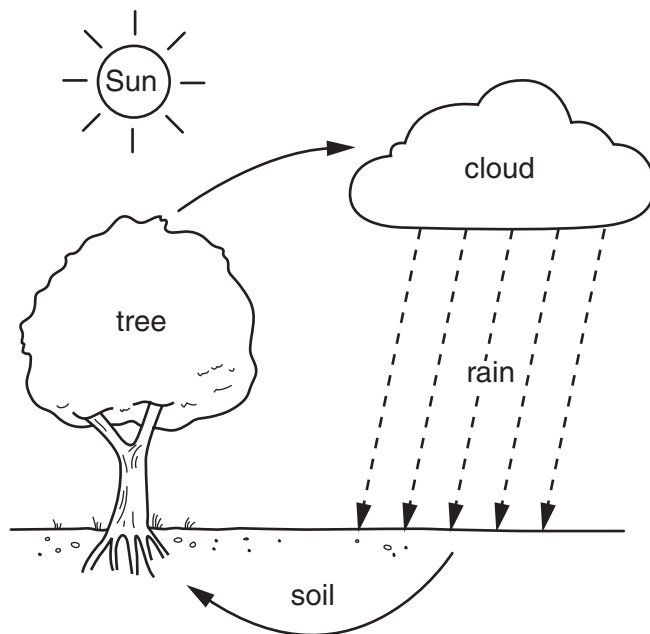
- A P and Q are decomposers.
  - B P and Q are herbivores.
  - C W and X are consumers.
  - D W and X are producers.
- 33 The diagram shows organisms in a food chain.



Which organism is a producer?

- A bird of prey
  - B insect
  - C plant
  - D small bird
- 34 Which term can be described as ‘many different species living together, interacting with each other and with their physical environment’?
- A a food chain
  - B a food web
  - C a nutrient cycle
  - D an ecosystem

35 The diagram shows part of the water cycle.

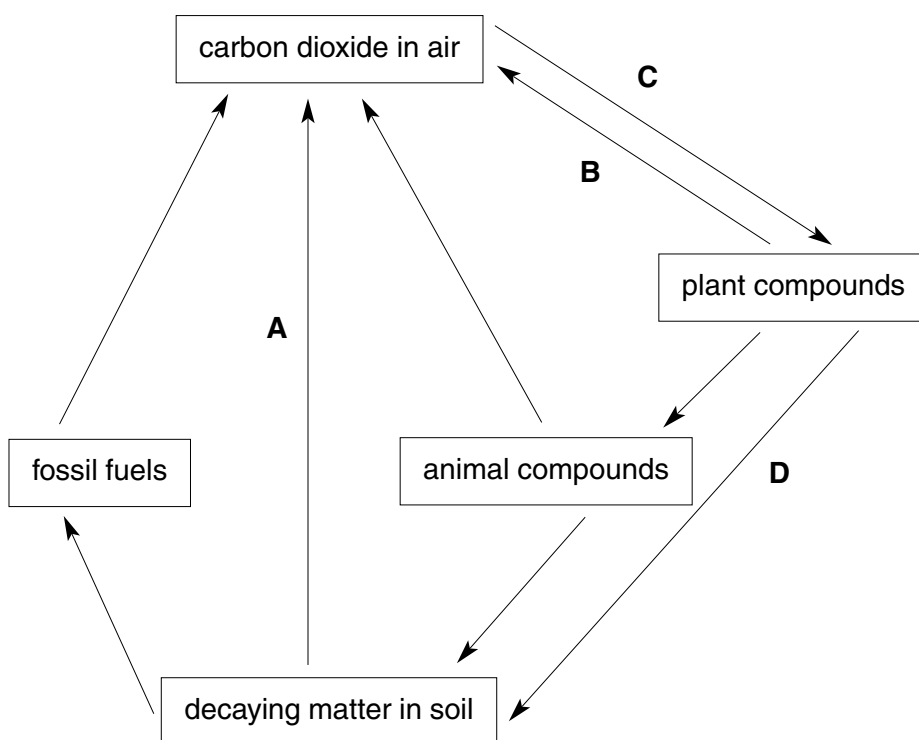


What is responsible for water loss from the tree?

- A condensation
- B respiration
- C translocation
- D transpiration

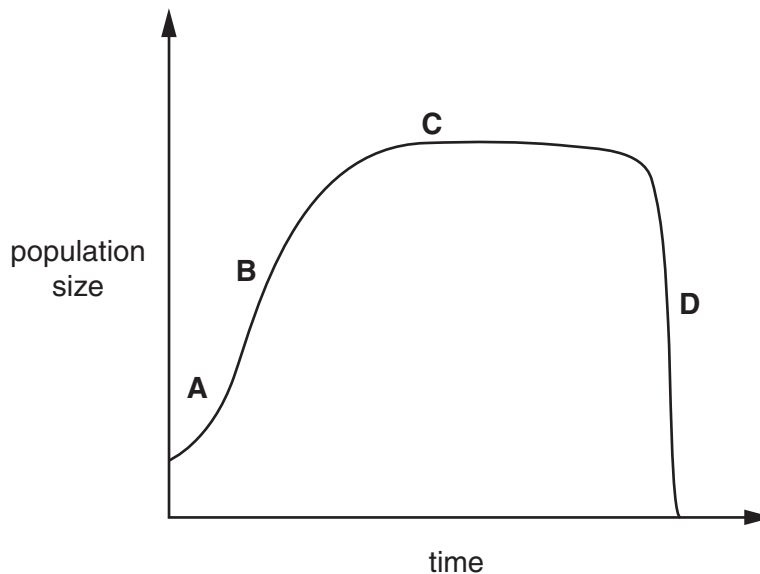
36 The diagram shows part of the carbon cycle.

Which letter represents photosynthesis?

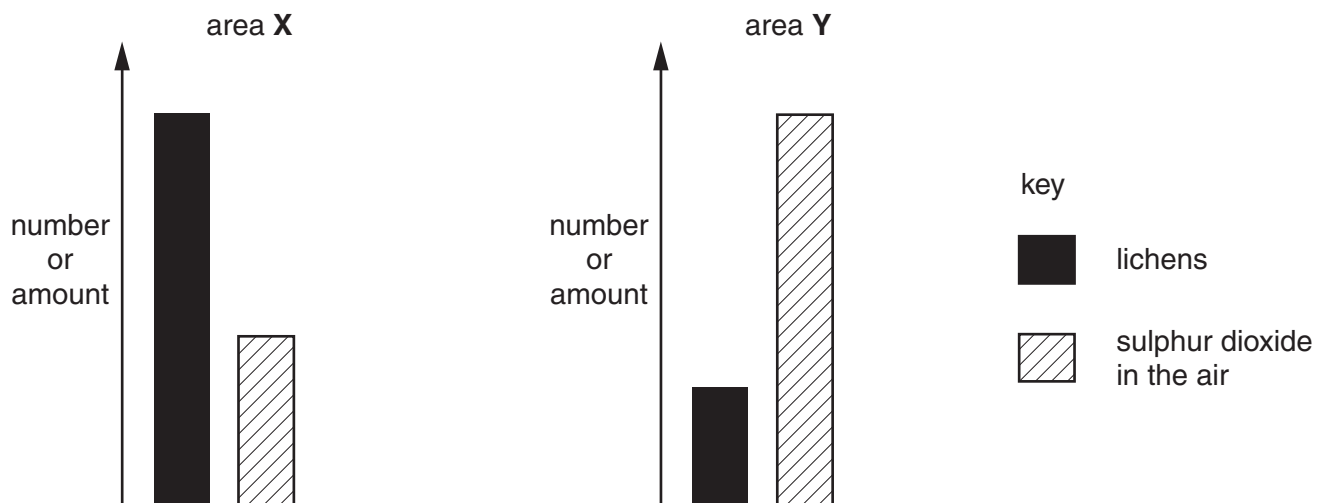


37 The diagram shows how a new population may grow over time.

At which point are the greatest numbers being added to the population?



38 Lichens grow on tree trunks and buildings. The diagrams show the number of lichens and the amount of sulphur dioxide in the air for two areas, X and Y.



Which conclusion can be made from these diagrams?

- A An increase in the amount of sulphur dioxide results in a decrease in the number of lichens.
- B Area X is more heavily polluted by sulphur dioxide than area Y.
- C Lichens need sulphur dioxide to survive.
- D Lichens produce sulphur dioxide and pollute the atmosphere.



39 What is reduced by deforestation?

- A force of rain hitting the ground
- B rainwater run-off
- C soil erosion
- D soil fertility

40 What are the main undesirable effects of sulphur dioxide pollution released by factories, overuse of fertilisers and nuclear fall out?

	sulphur dioxide pollution	overuse of fertilisers	nuclear fall out
<b>A</b>	acid rain	genetic mutations	eutrophication
<b>B</b>	acid rain	eutrophication	genetic mutations
<b>C</b>	genetic mutations	eutrophication	acid rain
<b>D</b>	eutrophication	acid rain	genetic mutations





