



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/01**

Paper 1 Multiple Choice

**May/June 2007**

**45 minutes**

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

\* 3 7 2 5 8 9 8 2 4 1 \*

**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 process involves the release of energy from food substances in all living cells?
- A breathing
  - B nutrition
  - C respiration
  - D transpiration
- 2 Which of the four vertebrates in the table is a mammal?

	scaly skin	hair	four limbs	tail
<b>A</b>	✓	x	✓	✓
<b>B</b>	✓	✓	x	✓
<b>C</b>	x	x	✓	x
<b>D</b>	x	✓	✓	✓

key

✓ = present

x = not present

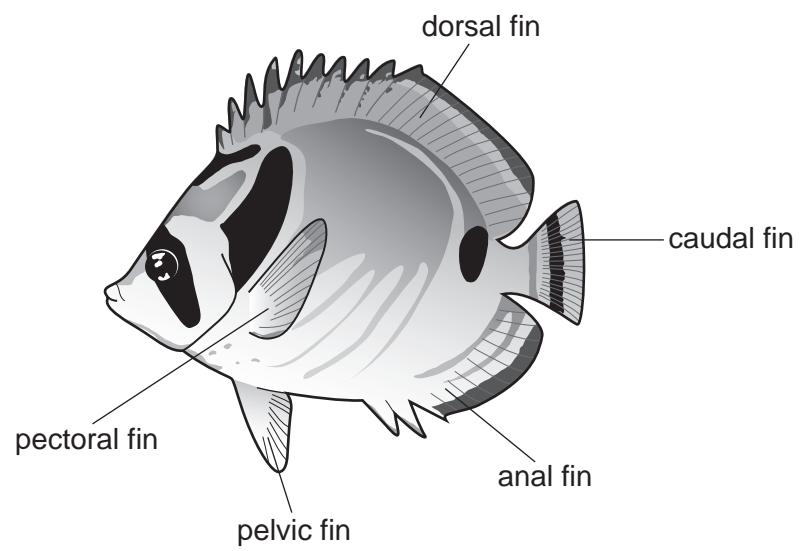
- 3 The picture shows an animal.



What is the name of this animal according to the **binomial system**?

- A Catus
- B *Felis leo*
- C Male *African lion*
- D Top African jungle carnivore

4 The diagram shows a fish.



Use the key to identify the fish.

- 1 black stripe across the eye ..... go to 2
- no black stripe across the eye ..... **A**
- 2 black stripe on caudal fin ..... go to 3
- no black stripe on caudal fin ..... **B**
- 3 black spot below dorsal fin ..... **C**
- no black spot below dorsal fin ..... **D**

5 Which structures are found in a human sperm cell?

	cell membrane	cell wall	haploid nucleus
<b>A</b>	✓	x	x
<b>B</b>	✓	x	✓
<b>C</b>	✓	✓	✓
<b>D</b>	x	✓	✓

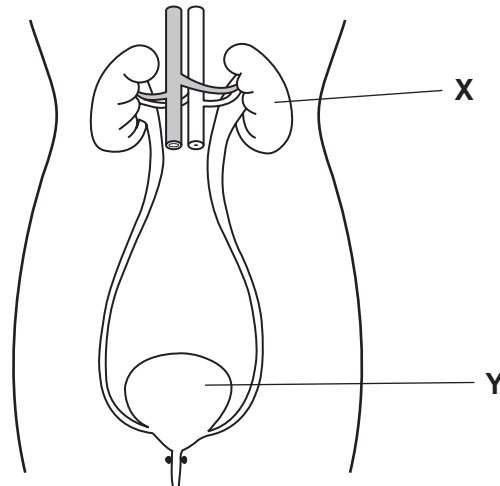
key  
 ✓ = present  
 x = not present

6 What is cytoplasm?

- A** a fluid-filled space
- B** a jelly-like substance
- C** a surrounding wall
- D** a tiny green disc

4

- 7 The diagram shows some of the structures found in the human abdomen.



What type of structures are **X** and **Y**?

	<b>X</b>	<b>Y</b>
<b>A</b>	organ	organ
<b>B</b>	organ	organ system
<b>C</b>	organ system	tissue
<b>D</b>	tissue	organ system

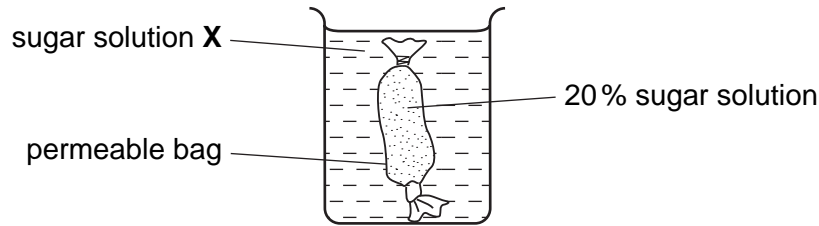
- 8 Cilia are present on the surface of the cells of the trachea. The cilia of a smoker work less effectively than those of a non-smoker.

How does this affect the smoker?

- A** Less carbon dioxide is released.
- B** Less oxygen is released.
- C** More bacteria enter the lungs.
- D** More mucus is removed from the lungs.
- 9 What is an example of osmosis?
- A** Carbon dioxide goes out through the stomata of a leaf.
- B** Digested food is absorbed from the small intestine.
- C** Oxygen goes into the blood from an alveolus.
- D** Water enters a plant root from the soil.

5

- 10 The diagram shows an experiment on diffusion.



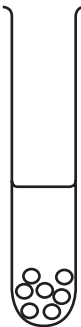
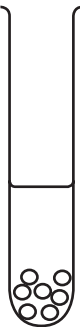
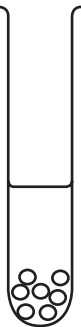

More sugar diffuses out of the bag than diffuses in.

What is the concentration of sugar in solution X?

- A** 10%                      **B** 20%                      **C** 30%                      **D** 40%
- 11 The temperature of an enzyme-controlled reaction is increased by 10°C.
- How does this affect the rate of reaction?
- A** It always increases the rate.  
**B** It always decreases the rate.  
**C** It may increase or decrease the rate.  
**D** It has no effect on the rate.
- 12 An enzyme from the stomach that digests protein, and cooked egg white that contains protein, are placed in four test-tubes.

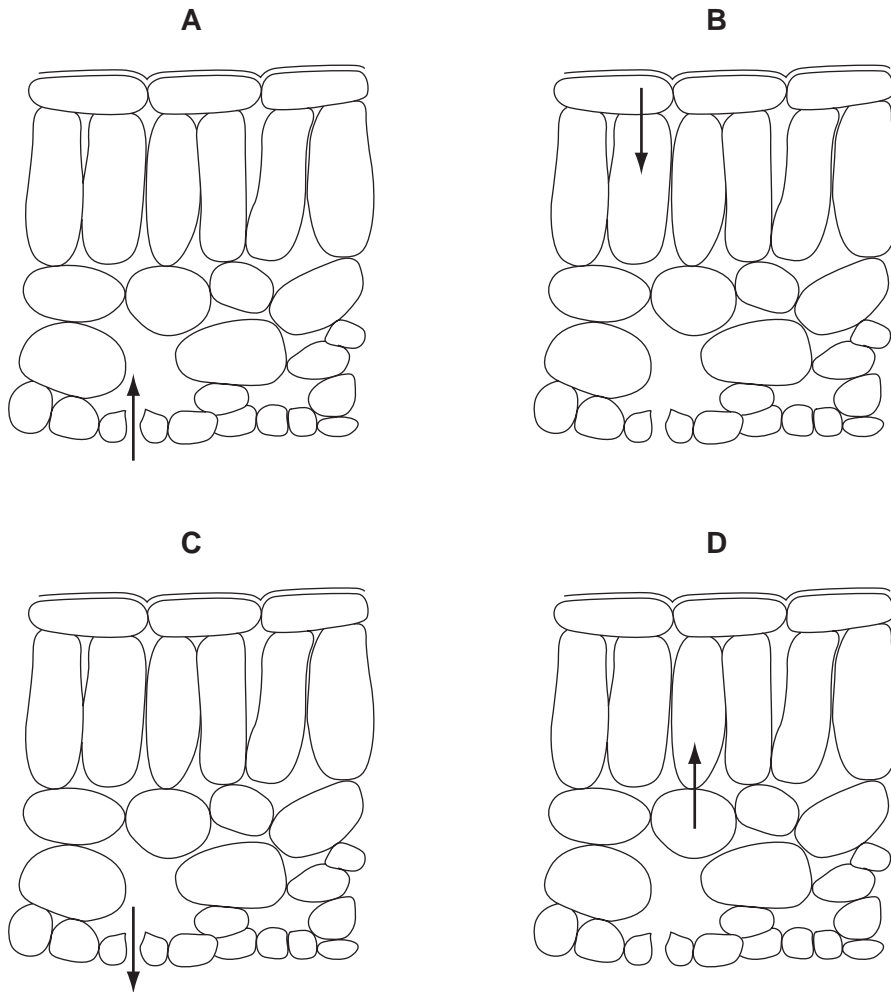
When the egg white is digested the mixture becomes clear.

Which tube becomes clear first?

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
			
egg white and enzyme acid temperature 20°C	egg white and enzyme acid temperature 37°C	egg white and enzyme alkali temperature 20°C	egg white and enzyme alkali temperature 37°C

13 The diagrams show the arrangement of cells in a section of a green leaf.

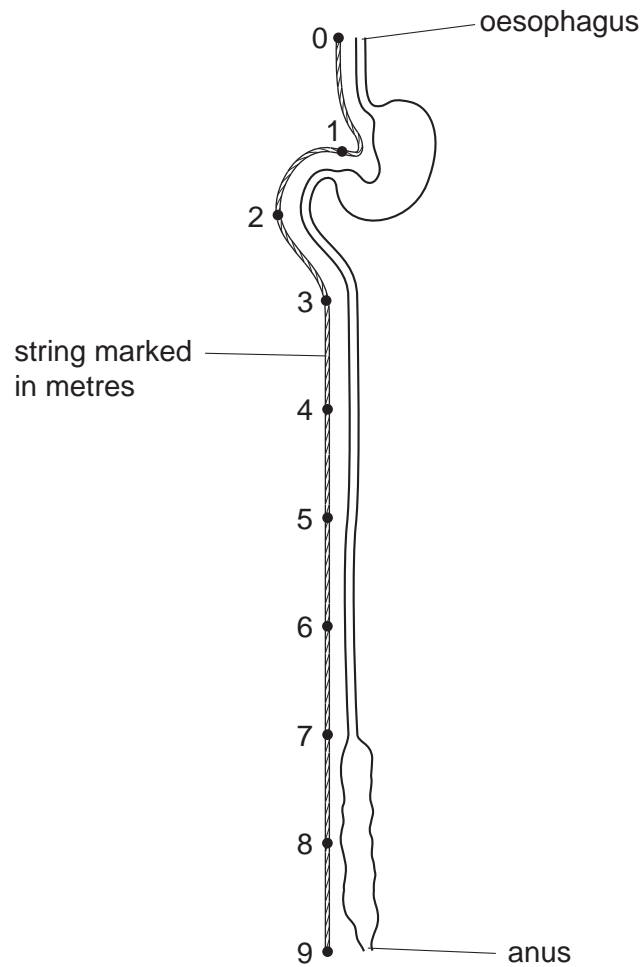
Which arrow represents the diffusion of the most oxygen during bright sunlight?



14 Which elements do carbohydrates contain?

- A carbon, hydrogen and oxygen
- B carbon, hydrogen and sulphur
- C carbon, nitrogen and oxygen
- D carbon, nitrogen and sulphur

15 The diagram shows the human alimentary canal, with a string marked in metres beside it.



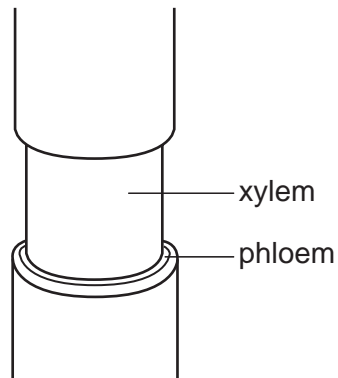
How long is the small intestine?

- A** 2 m                      **B** 6 m                      **C** 8 m                      **D** 9 m

16 What is a function of the human blood system?

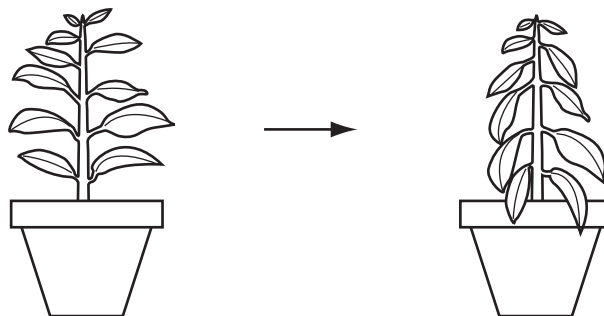
- A** carrying eggs from the ovary to the uterus  
**B** carrying glucose from the gut to the liver  
**C** carrying partly digested food from the mouth to the stomach  
**D** carrying urine from the kidney to the bladder

- 17 The diagram shows the stem of a plant. A strip of the outer tissue including the phloem has been removed.



How is transport in the plant affected?

- A Amino acids and sucrose cannot pass to the roots.
  - B Dissolved salts cannot pass to the leaves.
  - C Water cannot pass to the leaves.
  - D Water cannot pass to the roots.
- 18 The diagram shows how the appearance of a potted plant changes over a period of four days.



Which environmental conditions are most likely to cause this change?

	humidity	light intensity
<b>A</b>	high	high
<b>B</b>	high	low
<b>C</b>	low	high
<b>D</b>	low	low



19 Why is yeast used in breadmaking?

- A to provide alcohol
- B to provide carbon dioxide
- C to provide oxygen
- D to provide lactic acid

20 Which features are present in gaseous exchange surfaces?

	large surface area	moist	thick walls
<b>A</b>	✓	✓	x
<b>B</b>	✓	x	✓
<b>C</b>	x	✓	✓
<b>D</b>	✓	✓	✓

key

✓ = present

x = not present

21 Which component of cigarette smoke is most likely to cause lung cancer?

- A carbon dioxide
- B carbon monoxide
- C nicotine
- D tar

22 What is an example of homeostasis?

- A breathing in oxygen
- B regulating blood glucose
- C removing undigested food through the anus
- D urinating to empty the bladder

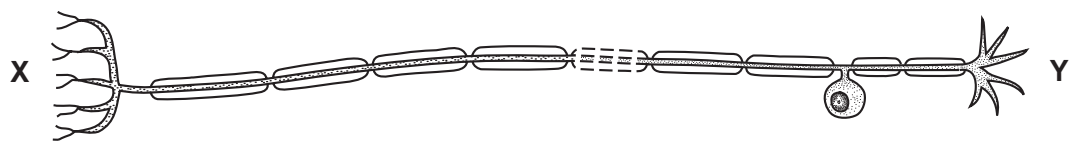
23 The table shows an analysis of urine and of blood after filtration in the kidney.

substance	percentage of substance in	
	blood	urine
glucose	0.10	0.00
salts	0.30	0.60
urea	0.03	2.00
water	90.00	97.00

Which substance is completely reabsorbed by the kidney?

- A glucose
- B salts
- C urea
- D water

24 The diagram shows a neurone.

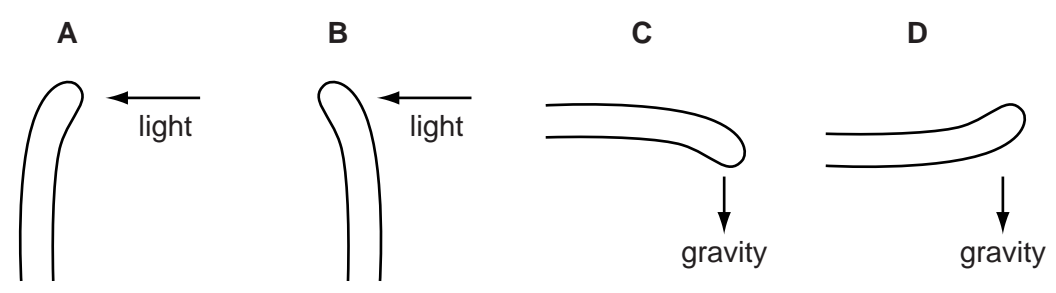


Which structures could be found at X and Y?

	X	Y
A	brain	intestine
B	brain	leg
C	eye	hand
D	skin	spinal cord

25 The diagram shows shoots of maize seedlings.

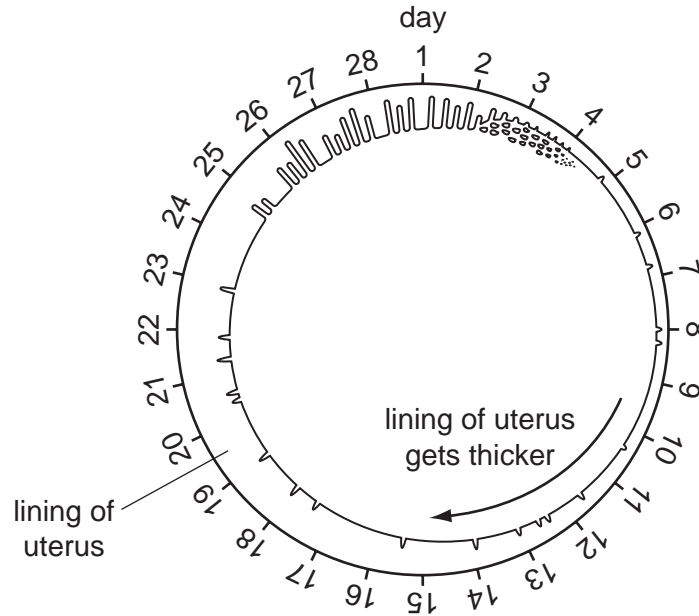
Which shoot shows negative geotropism?



26 Where are the male gametes produced in a flowering plant?

- A petal
- B sepal
- C stamen
- D stigma

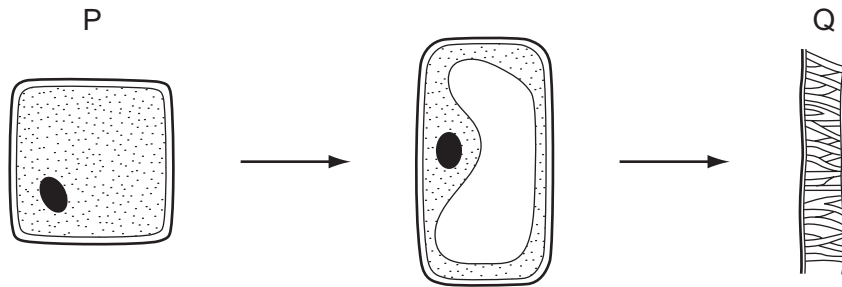
27 The diagram shows the changes that occur to the uterus lining during the menstrual cycle.



When do the following stages occur in this cycle?

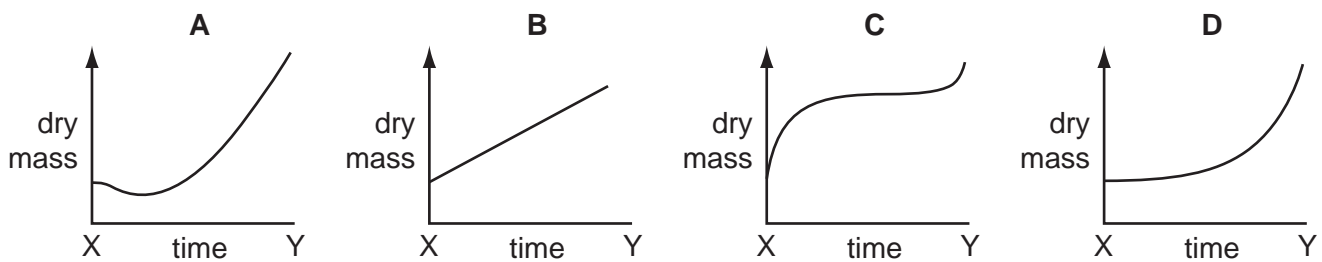
	bleeding	lining starts to break down	uterus lining thickens
<b>A</b>	days 13 – 14	days 6 – 25	days 1 – 4
<b>B</b>	days 1 – 4	days 26 – 27	days 6 – 25
<b>C</b>	days 6 – 25	days 1 – 4	days 26 – 27
<b>D</b>	days 1 – 4	days 13 – 14	days 6 – 25

28 The diagrams show a plant cell P changing to become cell Q.



What do the changes between P and Q show?

- A development and germination
  - B germination and mitosis
  - C growth and development
  - D mitosis and growth
- 29 Which graph shows the change in dry mass from the time a seed starts to germinate (X) until green leaves have appeared above the soil (Y)?



30 Which feature of a human is controlled by genes only?

- A age at death
  - B blood group
  - C dietary deficiency disease
  - D lung cancer
- 31 A dominant allele
- A causes only harmful characteristics.
  - B is responsible for male characteristics.
  - C never undergoes mutation.
  - D produces the same phenotype in heterozygotes and homozygotes.

- 32 In one type of plant, the allele for red flowers (R) is dominant to the allele for white flowers (r).

A plant with red flowers is crossed with a plant with white flowers. Half of the offspring have red flowers and half have white flowers.

What are the genotypes of the parent plants?

- A R and r
- B RR and rr
- C Rr and Rr
- D Rr and rr

- 33 In an ecosystem, plants absorb sunlight.

Which other organisms in the ecosystem depend on this process for their energy?

	animals	decomposers
A	✓	✓
B	✓	x
C	x	✓
D	x	x

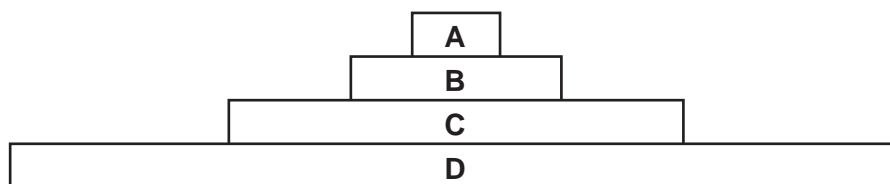
key

✓ = depend

x = do not depend

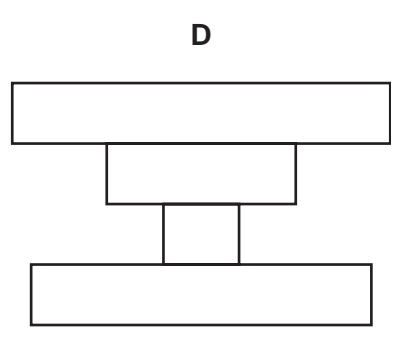
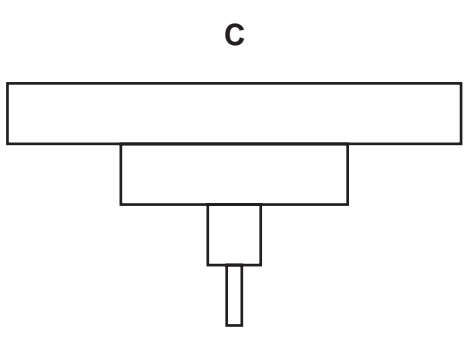
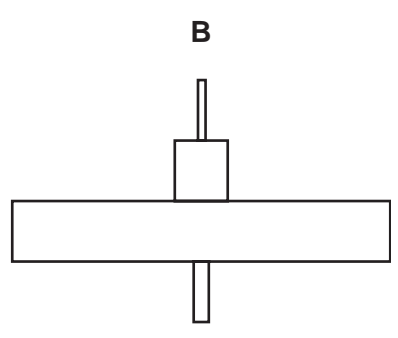
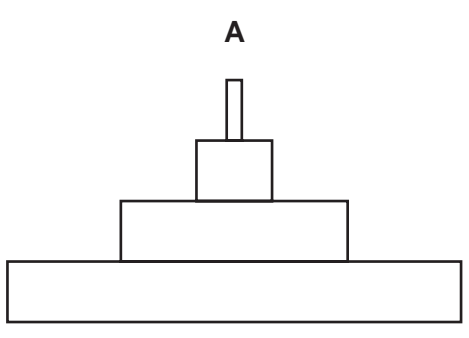
- 34 The diagram shows a pyramid of biomass for all organisms in an ecosystem.

Which organisms are herbivores?

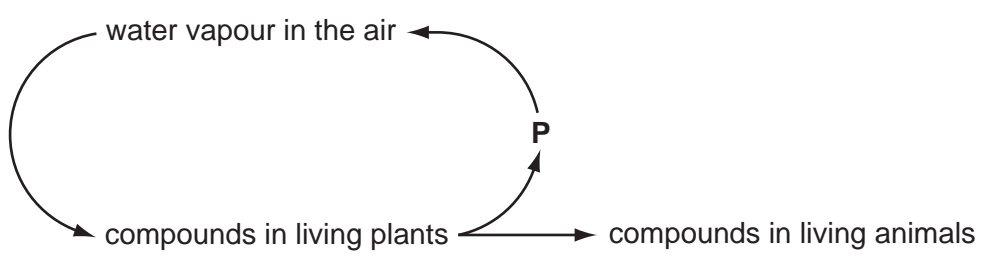


35 A single tree is food for a large population of caterpillars. Several small birds eat the caterpillars. The small birds are eaten by a bird of prey.

Which is the pyramid of numbers for this food chain?



36 The diagram shows part of the water cycle.



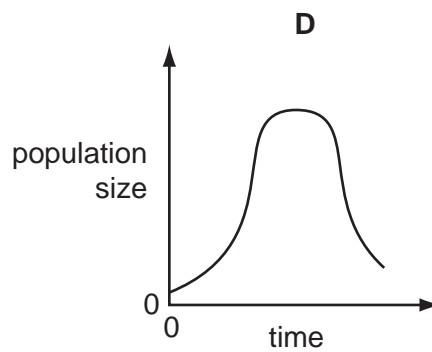
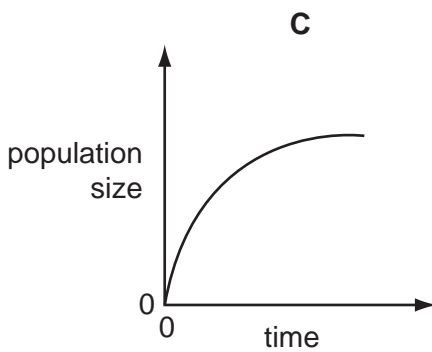
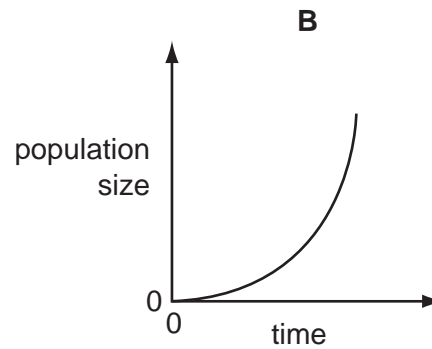
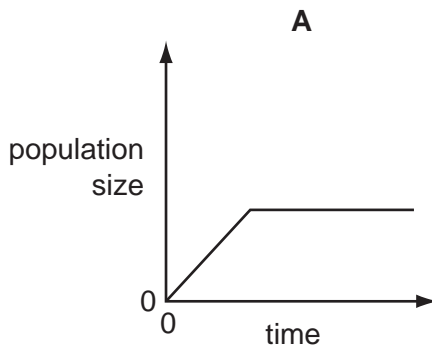
Which process in living plants is responsible for returning water vapour to the air at **P**?

- A** combustion
- B** condensation
- C** photosynthesis
- D** respiration

37 How will soil erosion and rainfall be affected by deforestation?

	soil erosion	rainfall
<b>A</b>	decrease	decrease
<b>B</b>	decrease	increase
<b>C</b>	increase	increase
<b>D</b>	increase	decrease

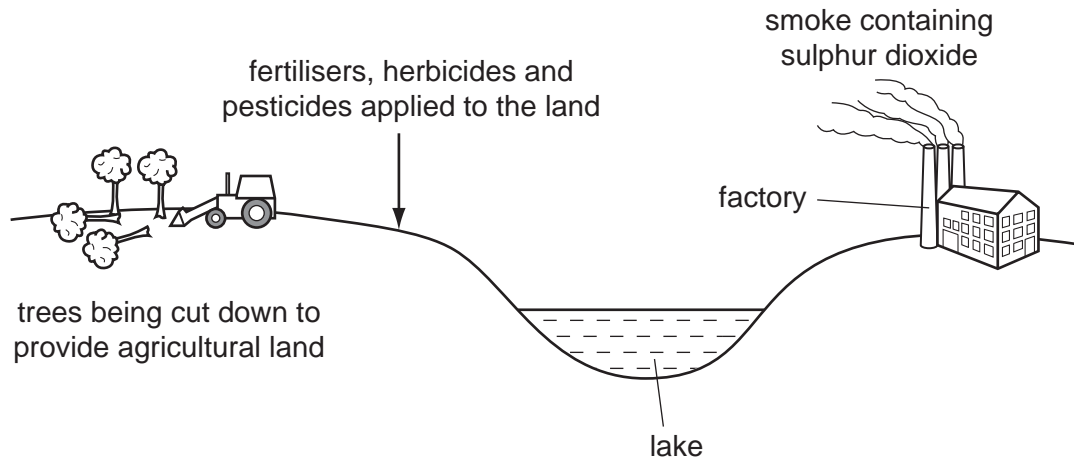
38 Which graph shows the growth of a population where there are no limiting factors?



39 Which human activity helps to prevent the extinction of animal species?

- A** creating more farmland
- B** creating nature reserves
- C** destroying natural habitats
- D** extracting natural resources

40 The diagram shows an area being developed for industry and agriculture.



Which would be the most likely to cause an initial increase in plant life in the lake?

- A fertilisers
- B herbicides
- C pesticides
- D smoke