

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

0610/01

Paper 1 Multiple Choice

May/June 2004

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.

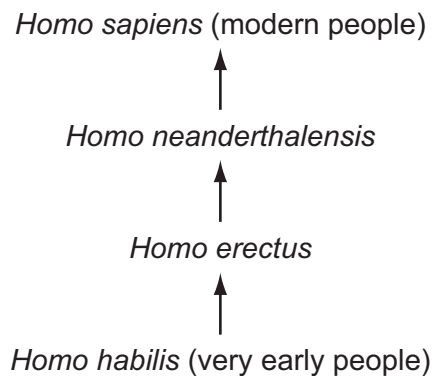
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

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



- 1 What is a characteristic of all living organisms?
- A breathing
B circulation
C egestion
D sensitivity
- 2 Which kind of skin do amphibians have?
- A dry without scales
B dry with scales
C moist without scales
D moist with scales
- 3 The diagram shows how *Homo sapiens* (modern people) could have evolved from their ancestors.



Which statement about modern people and their ancestors is correct?

- A They are in the same species and the same genus.
B They are in the same species but not the same genus.
C They are in the same genus but not the same species.
D They are neither the same species nor the same genus.
- 4 Which structures are found in a human sperm cell?

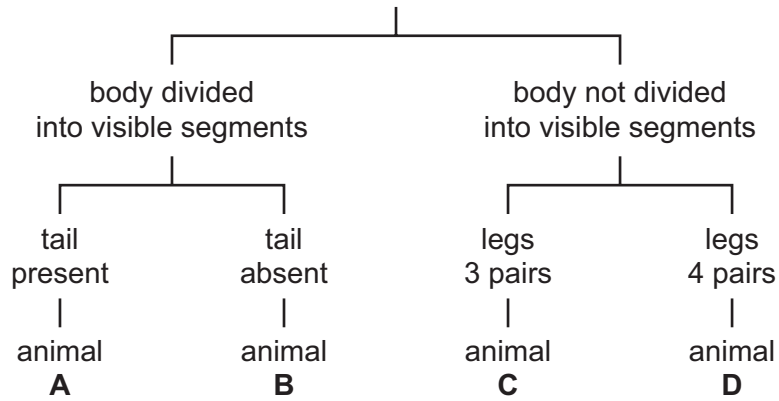
| | cell membrane | cell wall | haploid nucleus |
|----------|---------------|-----------|-----------------|
| A | ✓ | x | x |
| B | ✓ | x | ✓ |
| C | ✓ | ✓ | ✓ |
| D | x | ✓ | ✓ |

key
✓ = present
x = absent

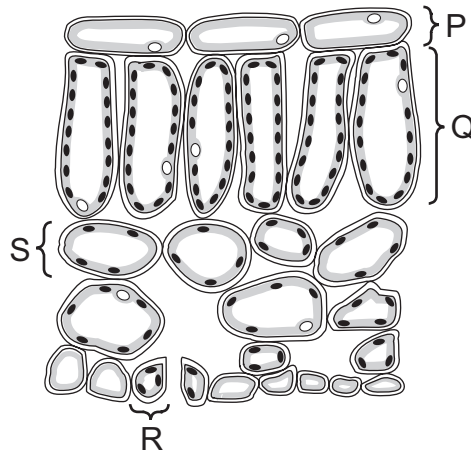
5 The diagram shows an animal.



Using the key, which animal is it?



Use the diagram of a section through a leaf to answer questions 6 and 7.



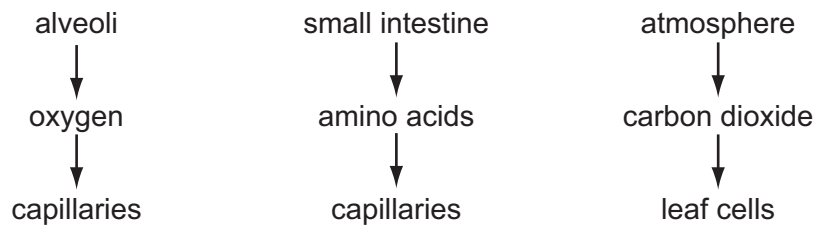
6 Which can perform the most photosynthesis?

- A P B Q C R D S

7 The structures shown are all parts of the same

- A cell.
- B organ.
- C organ system.
- D tissue.

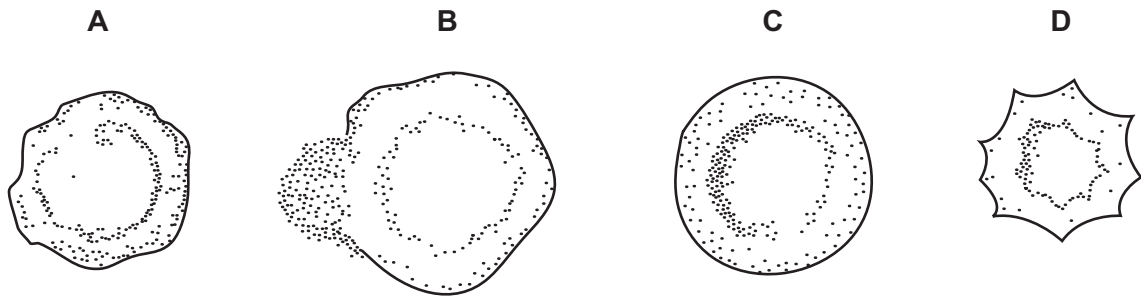
- 8 The diagrams show examples of movement of substances in organisms.



Which process is taking place in all three examples?

- A assimilation
 B diffusion
 C osmosis
 D translocation
- 9 Some red blood cells were placed in distilled water and others were placed in three salt solutions of different concentrations.

Which diagram shows the appearance of a cell has changed after being in the distilled water for a short time?

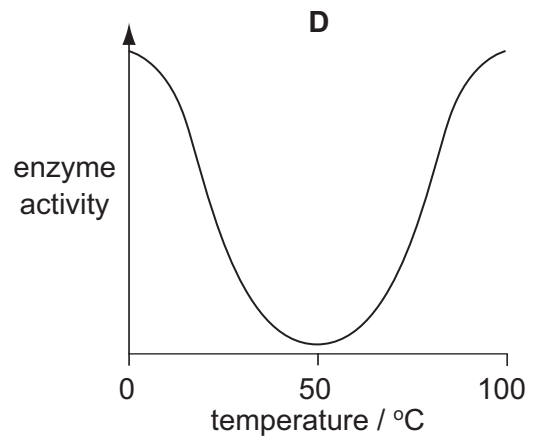
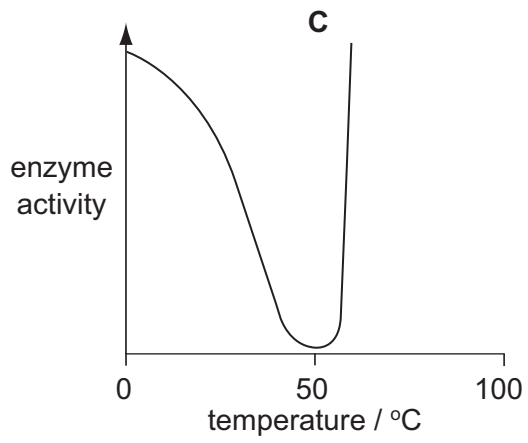
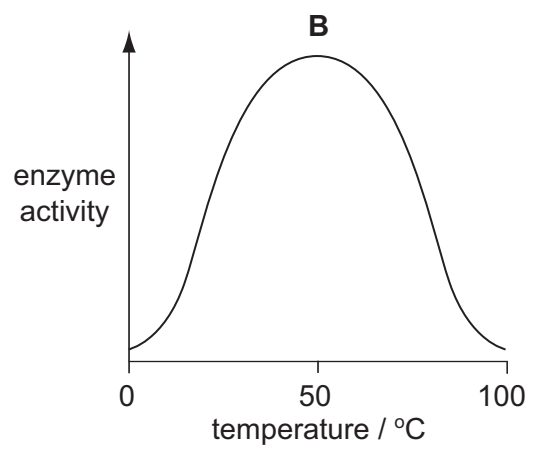
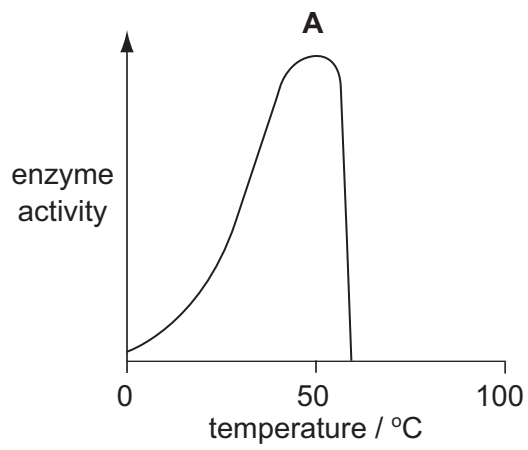


- 10 The table shows the conditions in four test-tubes containing equal quantities of starch and salivary amylase.

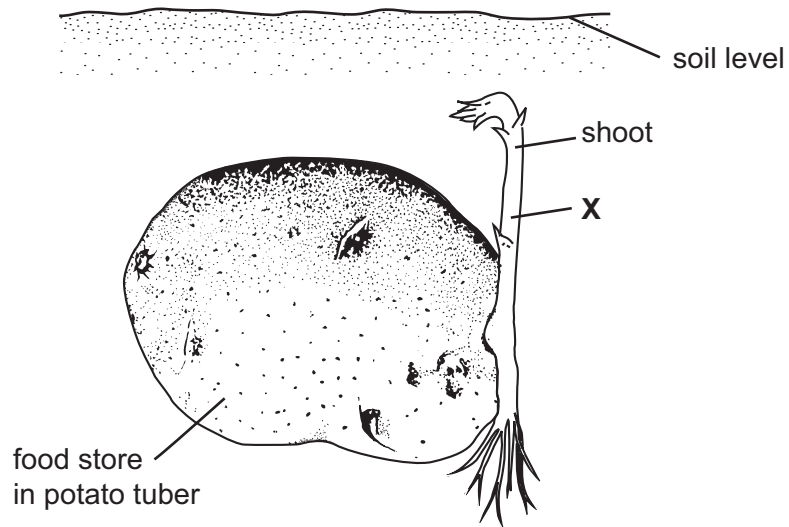
In which test-tube is the starch broken down fastest?

| | pH | temperature |
|----------|----|-------------|
| A | 2 | 27 |
| B | 2 | 37 |
| C | 7 | 27 |
| D | 7 | 37 |

11 Which graph shows the effect of temperature on the activity of an enzyme?



12 The diagram shows a shoot growing from a potato tuber.



What is being transported in the phloem cells at X?

- A starch downwards
 - B starch upwards
 - C sugars downwards
 - D sugars upwards
- 13 Which substance contains nitrogen?
- A fat
 - B glucose
 - C protein
 - D starch
- 14 Why is sunlight necessary for photosynthesis?
- A It is a catalyst.
 - B It is a source of energy.
 - C It provides nutrients.
 - D It provides oxygen.

15 The table shows the percentage of protein, fat and carbohydrate in four samples of dried food.

Which sample has the highest energy content?

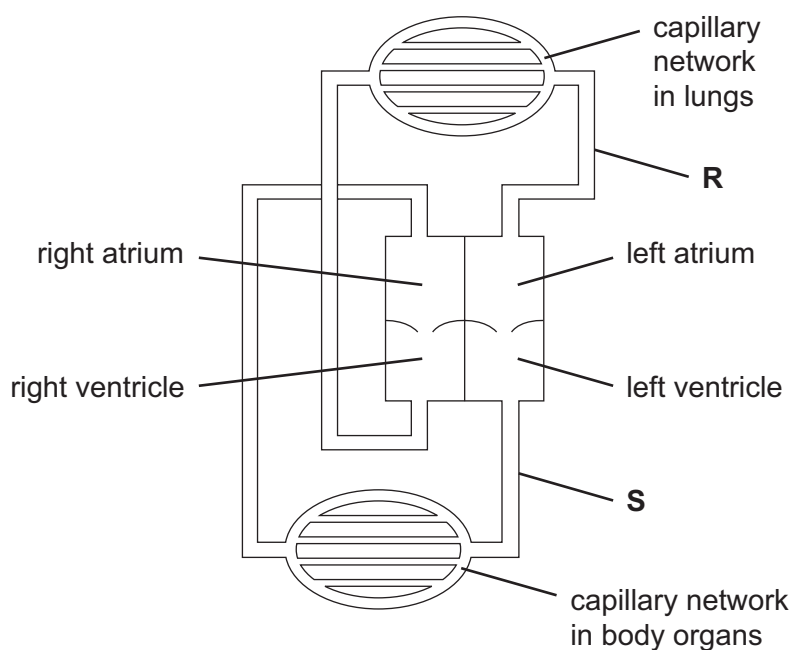
| | protein % | fat % | carbohydrate % |
|----------|--------------|----------|-------------------|
| A | 76 | 9 | 15 |
| B | 17 | 0 | 83 |
| C | 33 | 32 | 35 |
| D | 15 | 85 | 0 |

16 The table shows some of the nutrients in four meals.

Which meal will be the most likely to stimulate peristalsis in the alimentary canal?

| | g/100g | | | |
|----------|--------------|-----|---------------------|---------|
| | carbohydrate | fat | fibre (roughage) | protein |
| A | 18 | 12 | 8 | 25 |
| B | 30 | 32 | 2 | 12 |
| C | 40 | 15 | 10 | 5 |
| D | 38 | 4 | 22 | 10 |

17 The diagram shows the circulatory system of a mammal.



What describes the blood in vessels **R** and **S**?

| | R | S |
|----------|--------------|--------------|
| A | deoxygenated | deoxygenated |
| B | deoxygenated | oxygenated |
| C | oxygenated | deoxygenated |
| D | oxygenated | oxygenated |

18 From which organ is most carbon dioxide excreted?

- A** kidney
- B** liver
- C** lung
- D** skin

19 Which word equation represents anaerobic respiration in muscles?

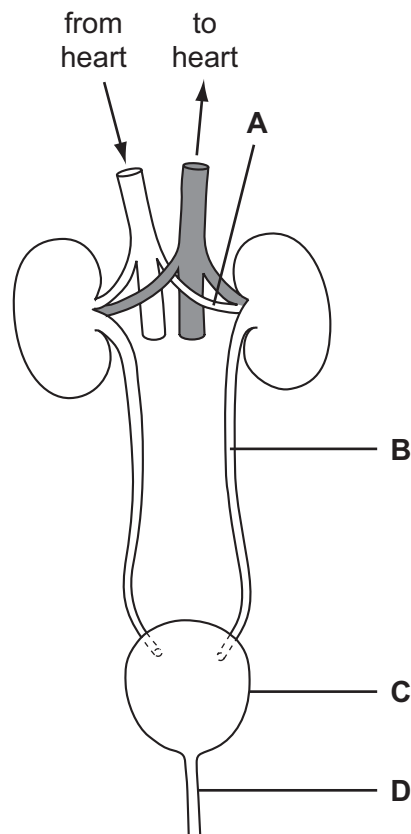
- A** glucose \rightarrow lactic acid + energy
- B** glucose \rightarrow ethanol + carbon dioxide + energy
- C** glucose + oxygen \rightarrow carbon dioxide + water + energy
- D** glucose + oxygen \rightarrow lactic acid + water + energy

20 Which process in green plants produces carbon dioxide?

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

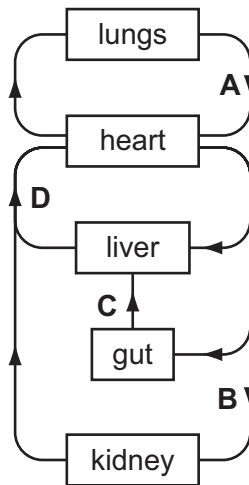
21 The diagram shows structures associated with the human urinary system.

Which structure is the urethra?

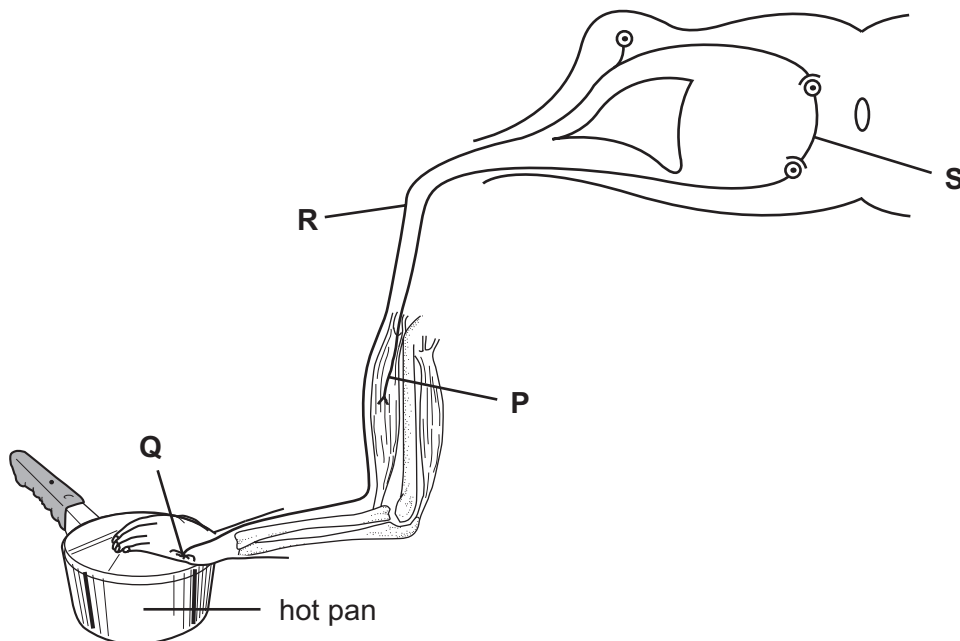


22 The diagram shows part of the human circulatory system.

In which vessel will absorbed alcohol first be found?



23 The diagram shows the structures involved in a reflex action.



What shows the sequence in which these structures become involved?

- A P → Q → R → S
- B P → S → R → Q
- C Q → R → S → P
- D Q → S → P → R

24 A person moves from sunlight into a dark room.

How do their eyes respond?

- A The blind spots become larger.
- B The blind spots become smaller.
- C The pupils become larger.
- D The pupils become smaller.

25 Which features are characteristic of insect-pollinated flowers?

- A bright petals, large feathery stigmas
- B bright petals, rough sticky pollen
- C large feathery stigmas, nectaries
- D small light pollen, nectaries

26 Which substance normally passes from a fetus to its mother through the placenta?

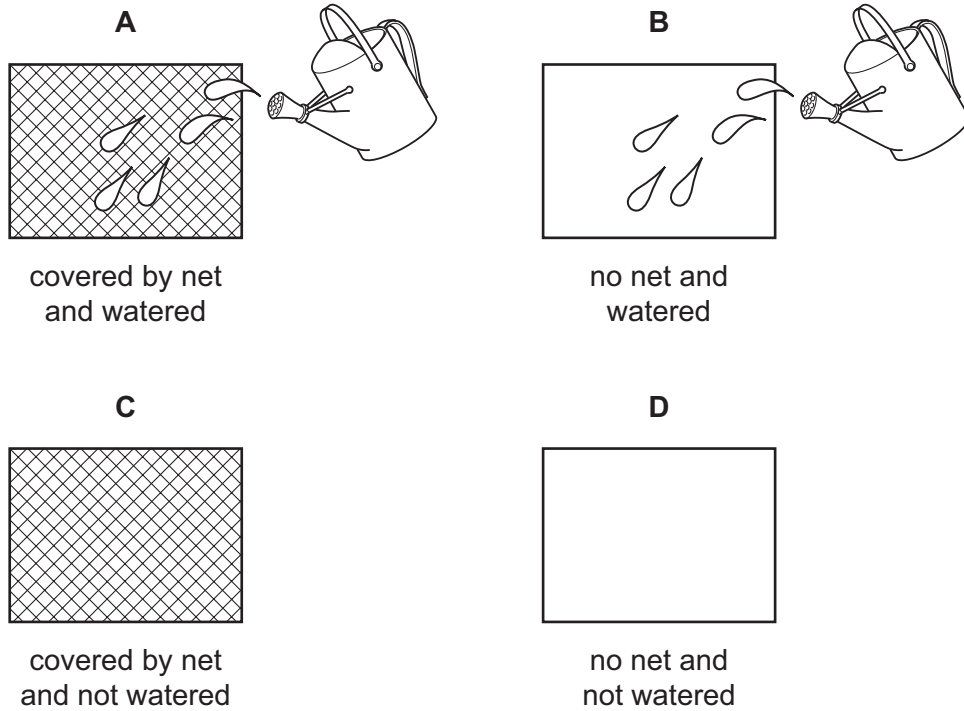
- A alcohol
- B glucose
- C oxygen
- D urea

27 What is the best measurement to determine the growth of seedlings?

- A the dry mass of the whole seedling
- B the height and width of the parts above ground
- C the length from the root-tip to the stem-tip
- D the total number of leaves

28 A plot of land was divided into four. Each part was sown with 100 seeds in the dry season. Two parts were covered with a net to stop small birds and mammals entering and two were watered, as shown in the diagram.

In which plot would most seeds germinate?



29 Which shows the sex chromosomes in the body cells and in the sex cells in a man?

| | body cells | sex cells |
|----------|------------|-----------|
| A | XX | all X |
| B | XX | all XX |
| C | XY | X or Y |
| D | XY | all XY |

30 In humans, which types of variation are shown by blood group and height?

| | blood group | height |
|----------|---------------|---------------|
| A | continuous | continuous |
| B | continuous | discontinuous |
| C | discontinuous | continuous |
| D | discontinuous | discontinuous |

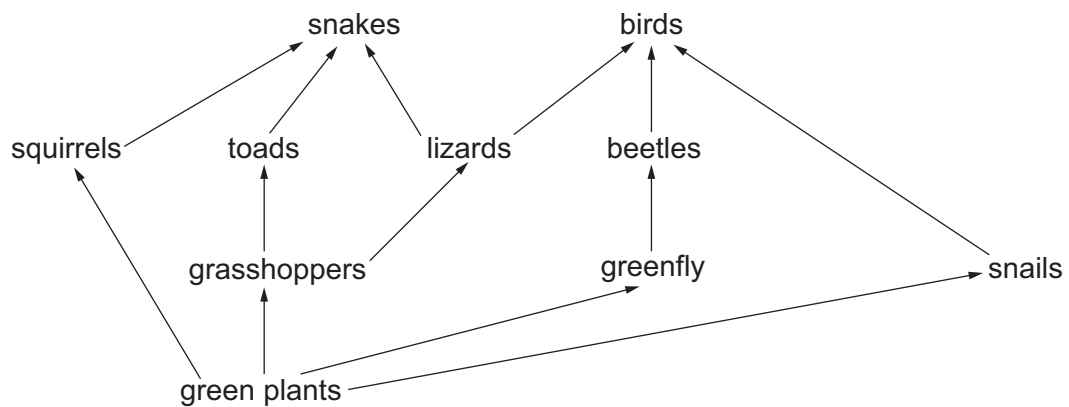
31 In a certain plant, the allele for white fruit, W , is dominant over the allele for yellow fruit, w .

A white-fruited plant was crossed with a yellow-fruited plant. About half of the offspring were white-fruited and the other half were yellow-fruited.

Which genotypes did the parent plants have?

- A ww and ww
- B Ww and ww
- C WW and ww
- D WW and Ww

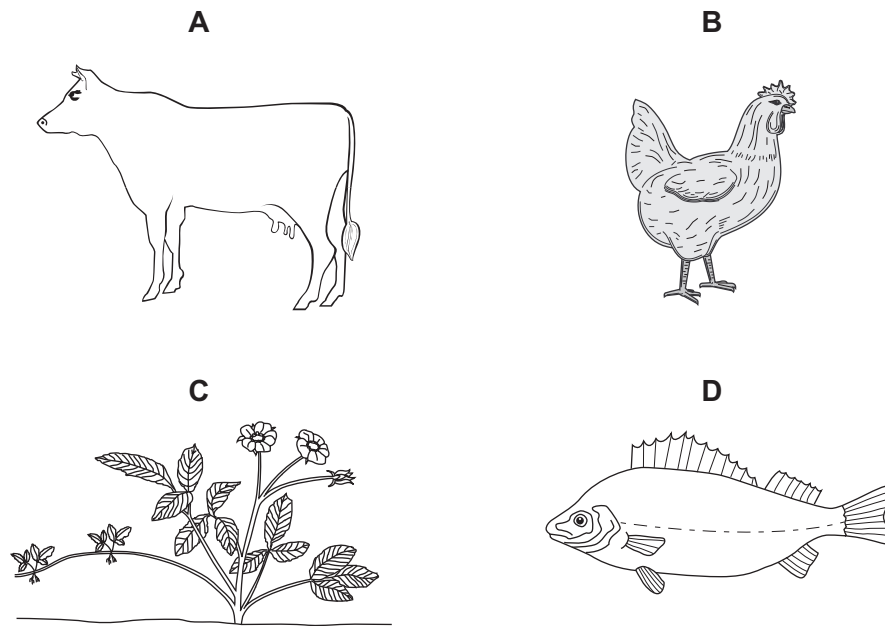
32 The diagram shows a food web.



Which organisms will increase in number, if the number of snakes increases?

- A birds
- B grasshoppers
- C lizards
- D squirrels

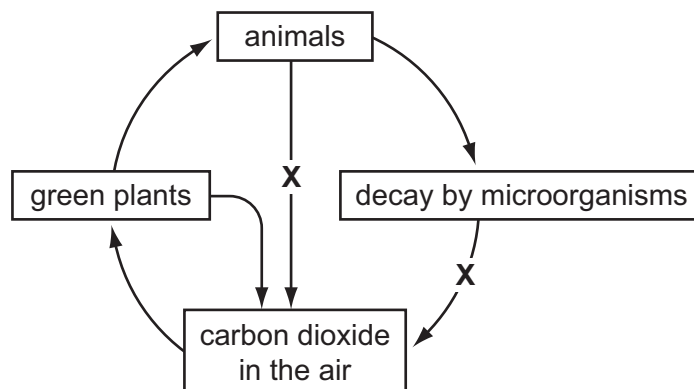
33 Which organism would be a producer in a food chain?



34 From which food chain is **least** energy lost?

- A green plant → human
- B green plant → sheep → human
- C green plant → cow (milk) → human
- D green plant → small fish → large fish → human

35 The diagram shows part of the carbon cycle.

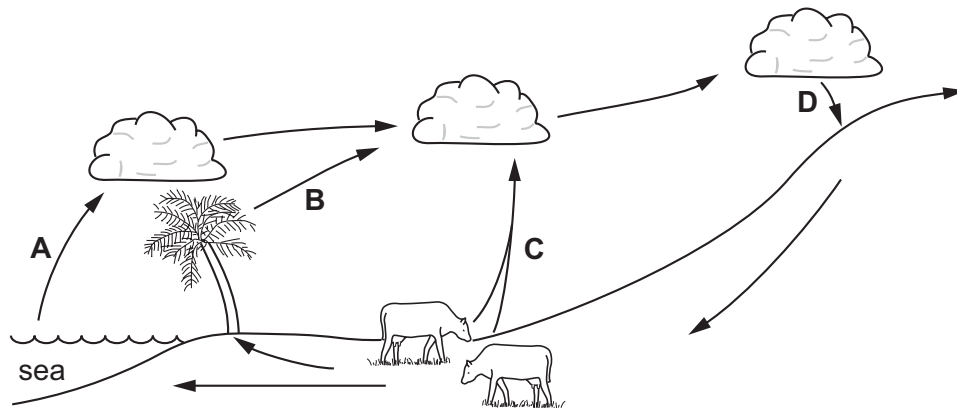


What does **X** represent?

- A death
- B digestion
- C photosynthesis
- D respiration

36 The diagram represents stages in the water cycle.

At which stage is the water in liquid form?

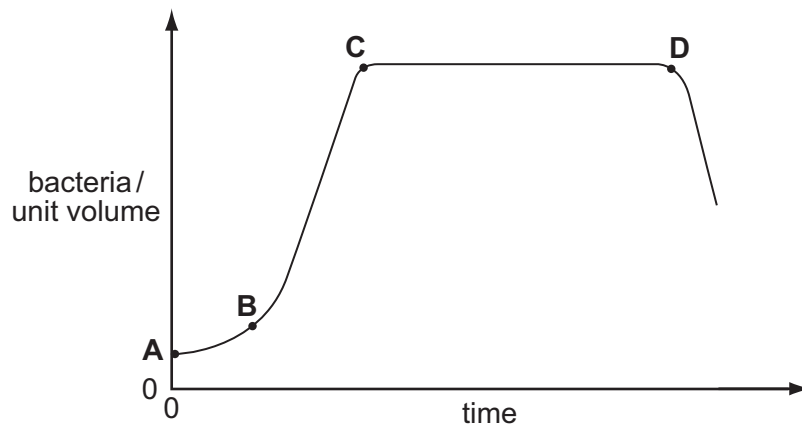


37 In which process is oxygen a waste product?

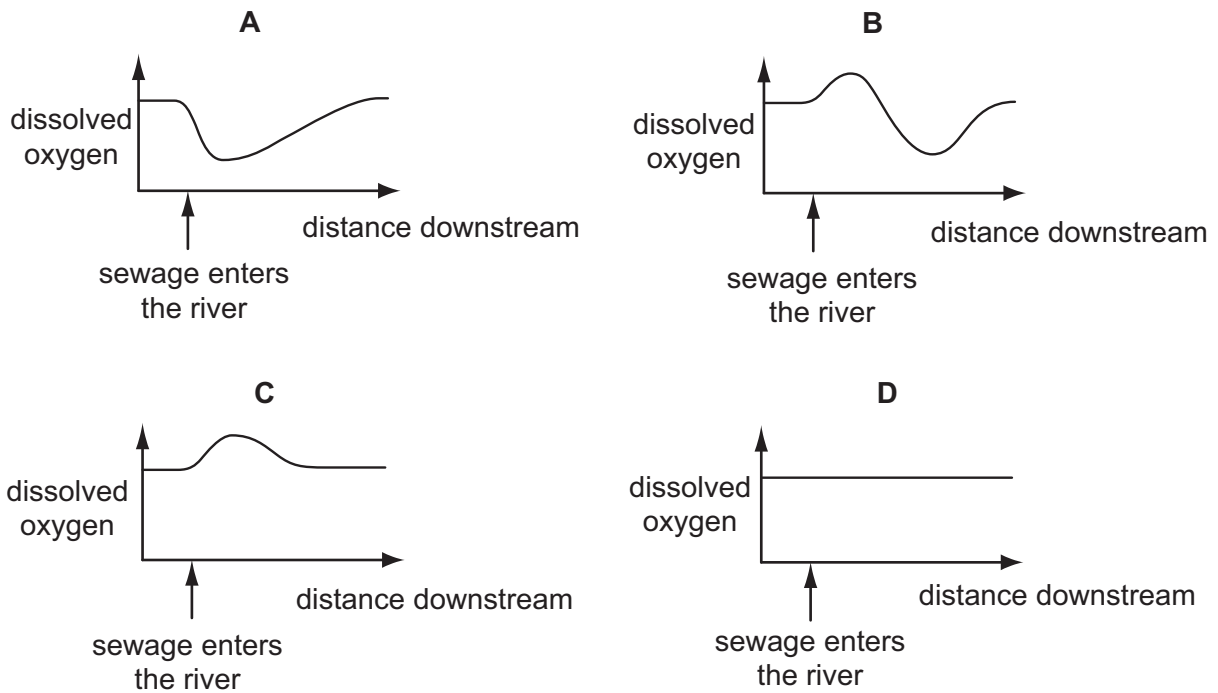
- A active transport
- B aerobic respiration
- C anaerobic respiration
- D photosynthesis

38 The graph shows the growth of a population of bacteria in a closed jar of nutrient solution.

At which point do limiting factors begin to control the growth of the population?

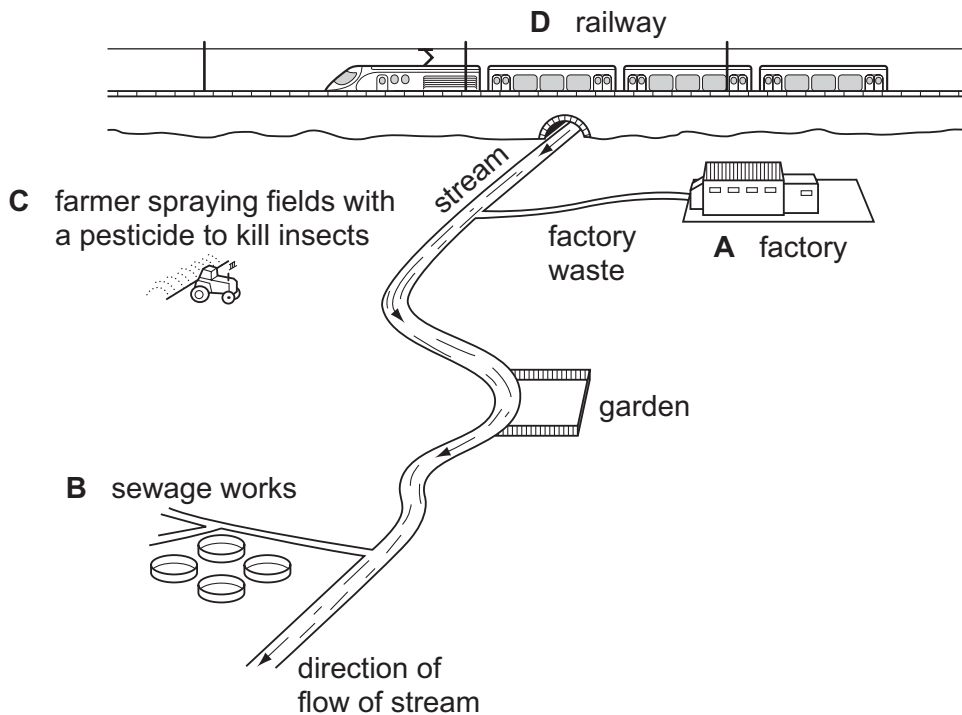


39 Which graph shows the effect of pollution by sewage on the amount of oxygen dissolved in a river?



40 A gardener planted some water plants in the stream at the bottom of the garden shown on the diagram. At first the plants grew well but after a while they died.

Which source of pollution is most likely to have caused the death of the plants?



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