

International General Certificate of Secondary Education  
CAMBRIDGE INTERNATIONAL EXAMINATIONS

**BIOLOGY**

**0610/1**

PAPER 1 Multiple Choice

**OCTOBER/NOVEMBER SESSION 2002**

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

**TIME** 45 minutes

**INSTRUCTIONS TO CANDIDATES**

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in 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 very carefully the instructions on the answer sheet.**

**INFORMATION FOR CANDIDATES**

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.

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**This question paper consists of 19 printed pages and 1 blank page.**

1 What are characteristics of all organisms?

- A egestion and excretion
- B egestion and nutrition
- C excretion and nutrition
- D nutrition and photosynthesis

2 The table shows some characteristic features of four vertebrates.

Which vertebrate is a mammal?

| vertebrate | feature |           |          |       |      |
|------------|---------|-----------|----------|-------|------|
|            | scales  | lays eggs | feathers | wings | hair |
| <b>A</b>   | ✓       | ✓         | ✗        | ✗     | ✗    |
| <b>B</b>   | ✗       | ✓         | ✗        | ✗     | ✗    |
| <b>C</b>   | ✗       | ✓         | ✓        | ✓     | ✗    |
| <b>D</b>   | ✗       | ✗         | ✗        | ✓     | ✓    |

key

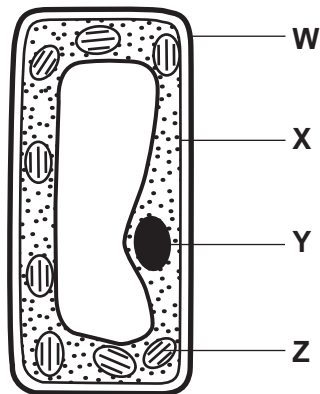
✓ feature present

✗ feature absent

3 Which information is needed when classifying a frog using the binomial system?

- A class : amphibian
- B genus : *Rana*
- C kingdom : animal
- D phylum : vertebrate

Use this diagram of the plant cell to answer questions 4 and 5.



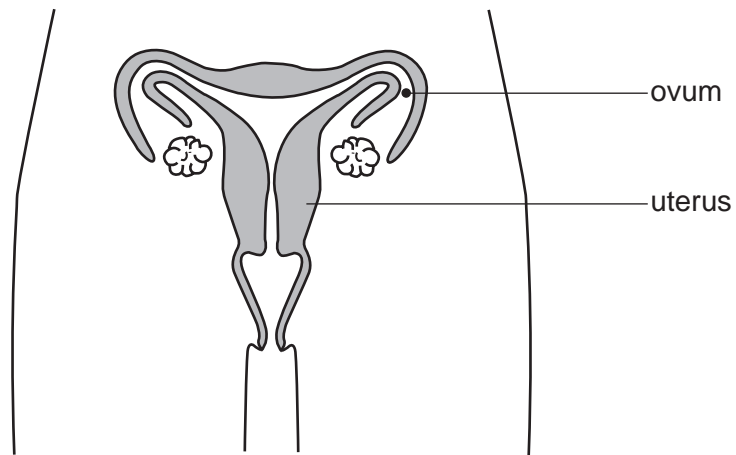
4 Which two parts are also found in liver cells?

- A W and X
- B W and Z
- C Y and X
- D Y and Z

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

- A W
- B X
- C Y
- D Z

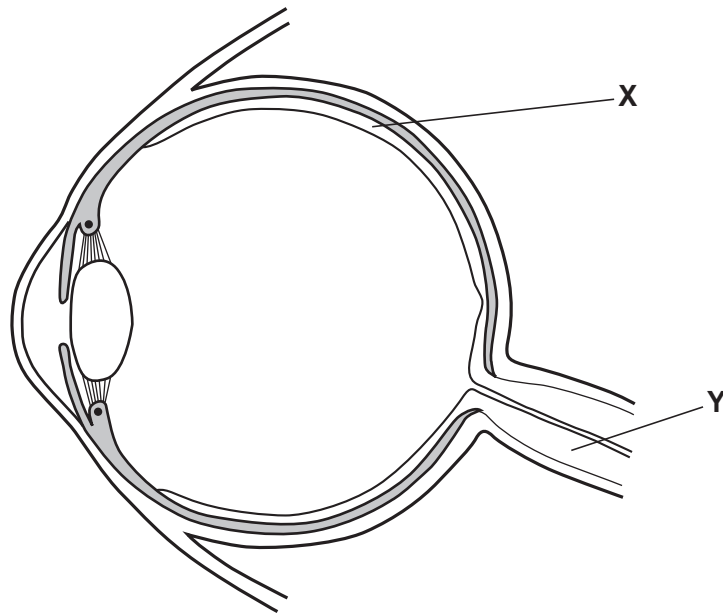
6 The diagram shows the female reproductive system.



At which level of organisation are the ovum and the uterus?

|          | ovum   | uterus |
|----------|--------|--------|
| <b>A</b> | cell   | organ  |
| <b>B</b> | cell   | tissue |
| <b>C</b> | organ  | tissue |
| <b>D</b> | tissue | organ  |

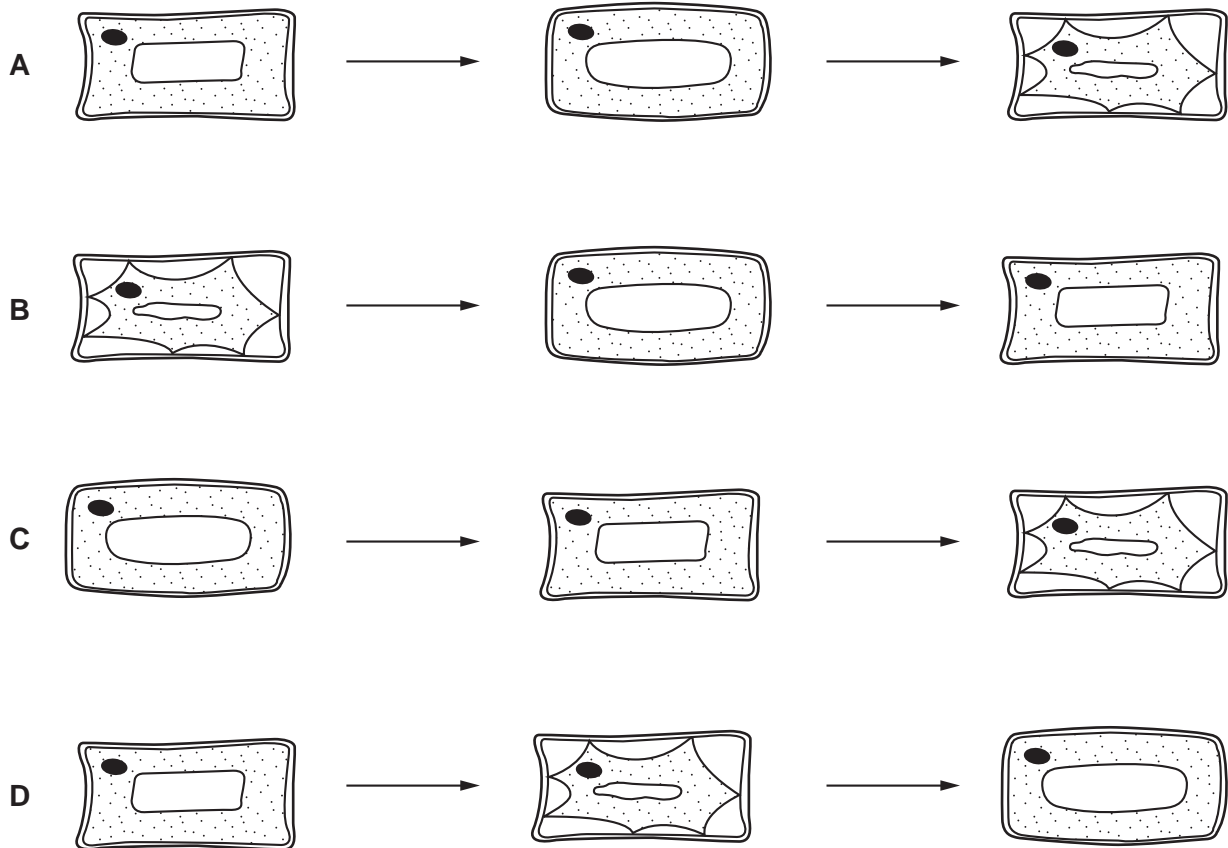
7 The diagram shows a section through an eye.



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

- A organs in an organ system
- B organs in a tissue
- C organ systems in an organ
- D tissues in an organ

- 8 Which shows the changes in appearance of a plant cell as it remains in a concentrated sugar solution for thirty minutes?



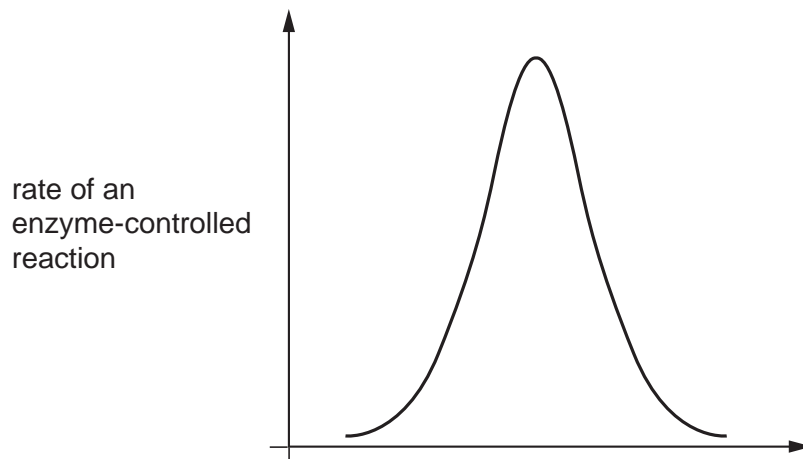
- 9 By which process does oxygen move into the cytoplasm of a root hair cell?

- A diffusion
- B osmosis
- C photosynthesis
- D transpiration

- 10 Which statement about enzymes is correct?

- A Enzymes are carbohydrates.
- B Enzymes are catalysts.
- C Enzymes are not affected by pH.
- D Enzymes are not affected by temperature.

11 The graph shows the results of an investigation into enzyme activity.



How should the horizontal axis of the graph be labelled?

- A pH
- B temperature
- C time
- D volume

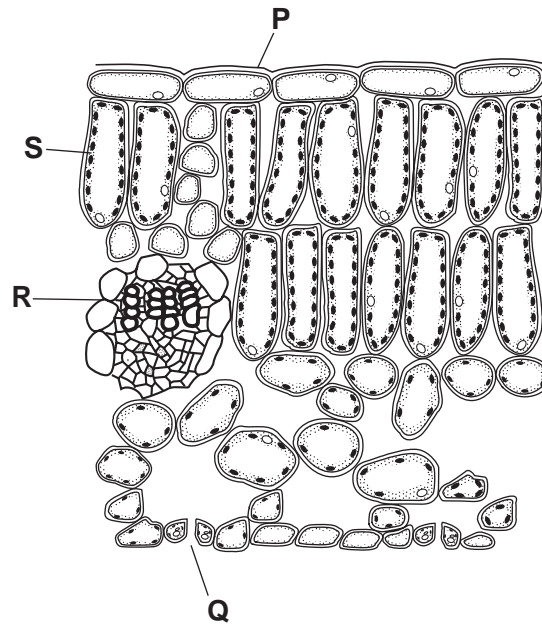
12 What are the features of a xylem vessel?

|          | side wall | end wall |
|----------|-----------|----------|
| <b>A</b> | thick     | absent   |
| <b>B</b> | thick     | present  |
| <b>C</b> | thin      | absent   |
| <b>D</b> | thin      | present  |

13 Which two substances are the products of photosynthesis?

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

14 The diagram shows a section through a leaf.



Between which two points does most gaseous exchange take place?

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

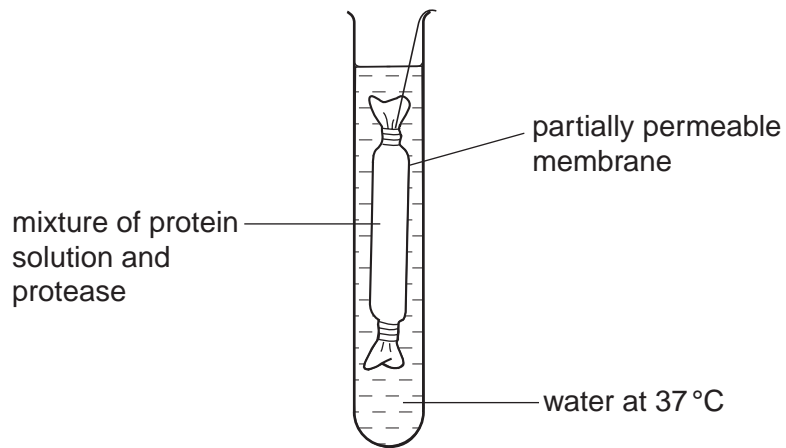
15 The table shows the nutritional information of a plain biscuit.

Which nutrient needs no digestion?

|          |         |       |
|----------|---------|-------|
| <b>A</b> | fat     | 3.0 g |
| <b>B</b> | glucose | 2.8 g |
| <b>C</b> | protein | 3.5 g |
| <b>D</b> | starch  | 5.5 g |

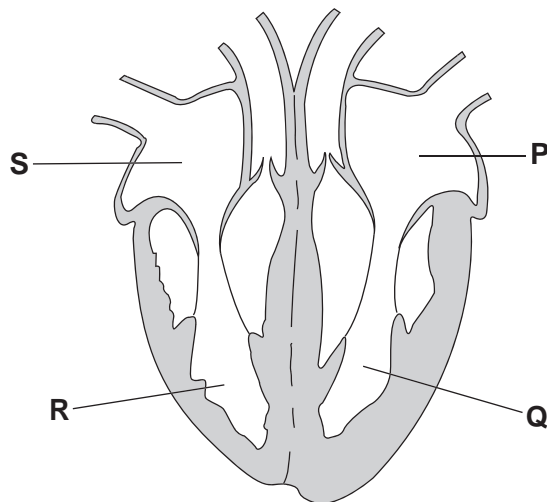


- 16 An experiment on diffusion was set up as shown in the diagram.



What was found in the water in the test-tube after 15 minutes?

- A amino acids
  - B fatty acids
  - C glucose
  - D glycerol
- 17 The diagram shows the four chambers of a human heart.



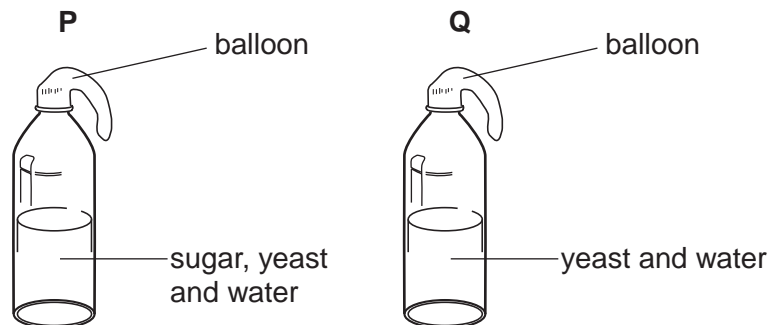
Which statement describes the direction of blood flow?

- A Blood enters P directly from the lungs.
- B Blood enters S directly from the lungs.
- C Blood passes directly from Q to P.
- D Blood passes directly from Q to the lungs.

- 18 The double circulation of the blood means that, for every complete circuit of the body,
- A atria and ventricles contract alternately.
  - B blood flows through the arteries and veins.
  - C blood flows through atria and ventricles.
  - D blood flows twice through the heart.
- 19 Which air sample has just been breathed out?

| air sample | percentage of oxygen | percentage of carbon dioxide | percentage humidity |
|------------|----------------------|------------------------------|---------------------|
| A          | 21                   | 0.04                         | 20                  |
| B          | 16                   | 4.04                         | 100                 |
| C          | 4                    | 0.40                         | 80                  |
| D          | 20                   | 4.00                         | 60                  |

- 20 In an experiment to investigate the anaerobic respiration of yeast, two bottles are set up in a warm room.

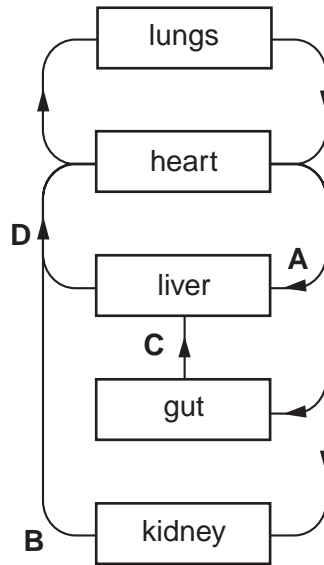


What describes the appearance of the balloons after one day?

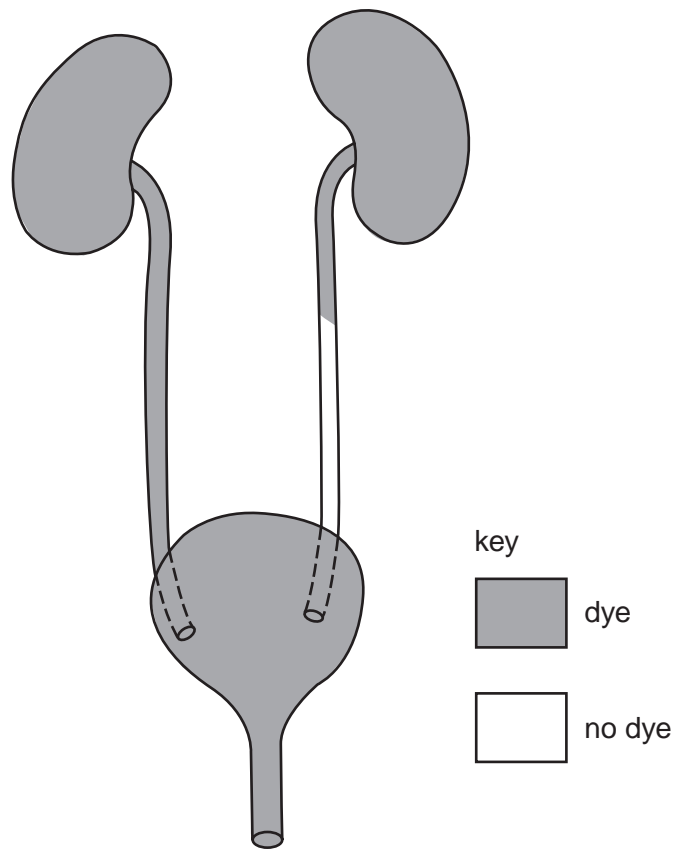
|   | balloon P | balloon Q |
|---|-----------|-----------|
| A | inflated  | inflated  |
| B | inflated  | no change |
| C | no change | inflated  |
| D | no change | no change |

21 The diagram shows a plan of part of the human circulatory system.

In which vessel are the breakdown products of alcohol first found?



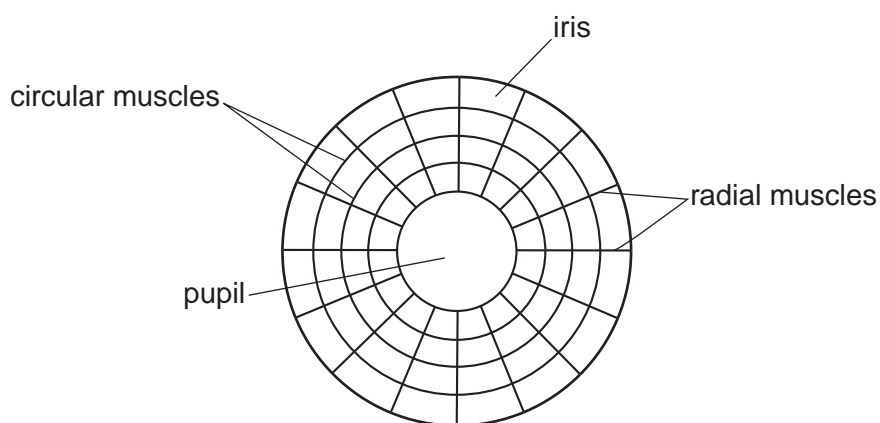
- 22 A patient has dye injected into the blood supply to his kidneys. The dye appears in his excretory system as shown.



Which part is blocked?

- A one kidney
  - B one ureter
  - C the bladder
  - D the urethra
- 23 In a reflex action, which term describes light, temperature and chemicals?
- A effectors
  - B impulses
  - C receptors
  - D stimuli

- 24 The diagram shows the muscles that control the size of the pupil in an eye.

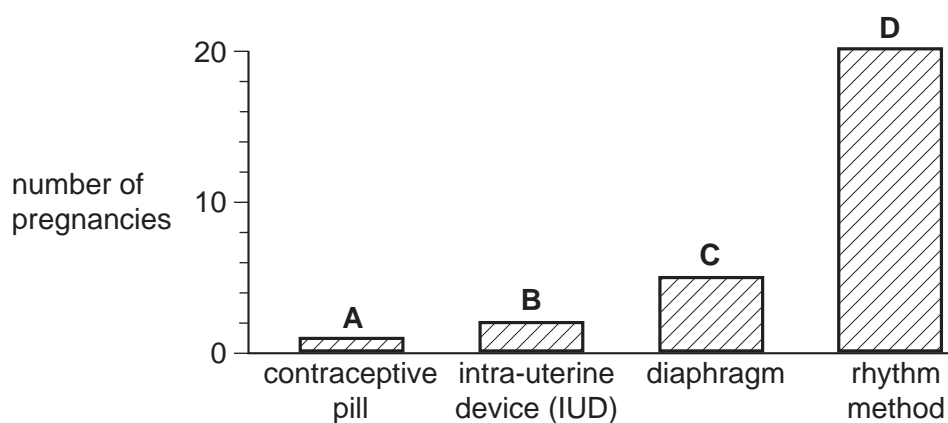


How do the muscles make the pupil larger?

|          | circular muscles | radial muscles |
|----------|------------------|----------------|
| <b>A</b> | contract         | contract       |
| <b>B</b> | contract         | relax          |
| <b>C</b> | relax            | contract       |
| <b>D</b> | relax            | relax          |

- 25 The graph shows the number of pregnancies that resulted while four groups of 100 women were each using a different method of contraception.

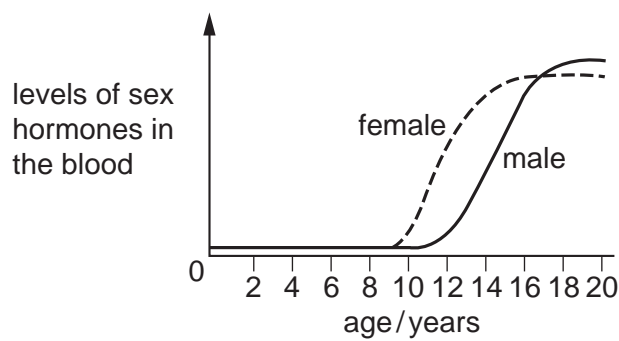
Which method of contraception is the most effective?



26 Which best describes sexual reproduction?

|          | number of parents | offspring                          |
|----------|-------------------|------------------------------------|
| <b>A</b> | one               | genetically different from parent  |
| <b>B</b> | one               | genetically identical to parent    |
| <b>C</b> | two               | genetically different from parents |
| <b>D</b> | two               | genetically identical to parents   |

27 The graph shows the average level of sex hormones in the blood of females and males.



What are these hormones?

|          | female       | male         |
|----------|--------------|--------------|
| <b>A</b> | adrenaline   | oestrogen    |
| <b>B</b> | insulin      | adrenaline   |
| <b>C</b> | oestrogen    | testosterone |
| <b>D</b> | testosterone | insulin      |

28 The table shows the conditions provided for four sets of seeds. All the seeds are well-watered.

Which of the seeds germinate?

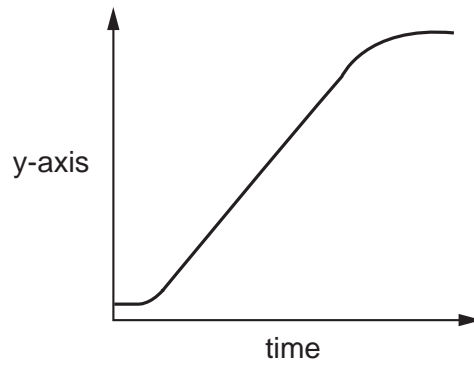
|          | oxygen | suitable temperature | carbon dioxide |
|----------|--------|----------------------|----------------|
| <b>A</b> | ✓      | ✓                    | ✗              |
| <b>B</b> | ✗      | ✓                    | ✗              |
| <b>C</b> | ✗      | ✗                    | ✓              |
| <b>D</b> | ✓      | ✗                    | ✓              |

key

✓ = condition present

✗ = condition absent

29 The graph shows a growth curve.



Which is the most accurate variable to plot on the y-axis?

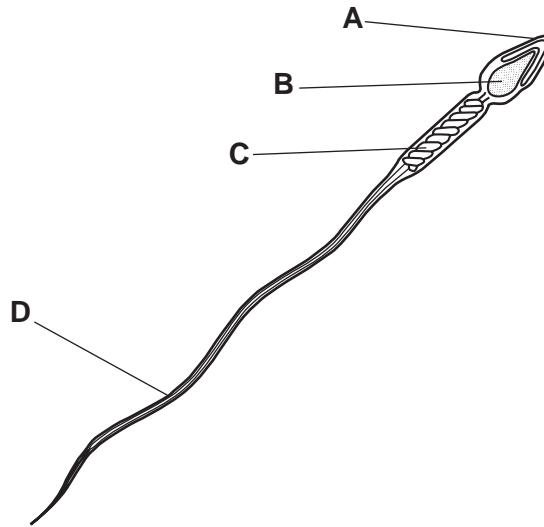
- A dry mass
- B fresh mass
- C length
- D volume

30 Which sex chromosomes in the egg and the sperm will produce a male child?

|          | sex chromosome<br>in egg | sex chromosome<br>in sperm |
|----------|--------------------------|----------------------------|
| <b>A</b> | X                        | X                          |
| <b>B</b> | X                        | Y                          |
| <b>C</b> | Y                        | X                          |
| <b>D</b> | Y                        | Y                          |

31 The diagram shows a sperm cell.

Which part contains genes?

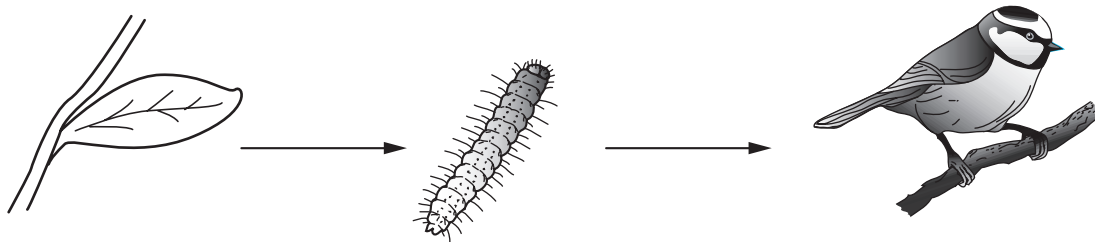


32 In a pea plant, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r).

If plants with the genotype Rr are crossed, what are the likely proportions of offspring?

- A all with round seeds
- B all with wrinkled seeds
- C 1 with round seeds : 1 with wrinkled seeds
- D 3 with round seeds : 1 with wrinkled seeds

33 The diagram shows a simple food chain.



What is the source of energy for this food chain?

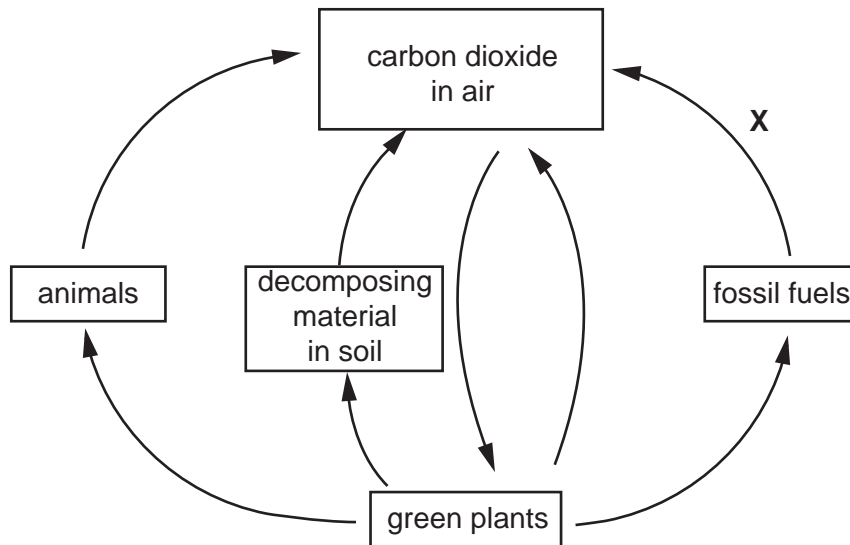
- A carbon dioxide
- B minerals
- C Sun
- D water



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

- A corn → hens → humans
- B grass → cows → humans
- C potatoes → humans
- D water plants → small fish → large fish → humans

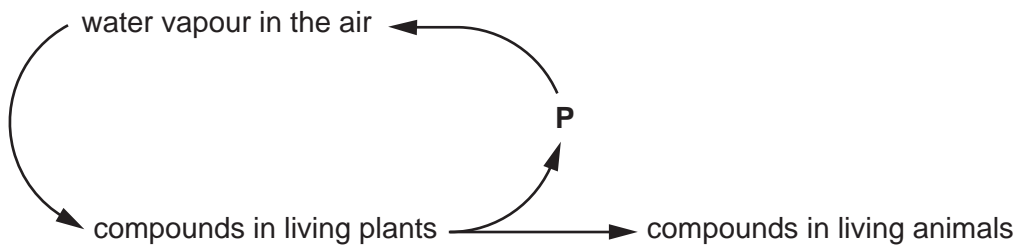
35 The diagram represents the carbon cycle.



Which process is represented by arrow **X**?

- A combustion
- B decay
- C photosynthesis
- D respiration

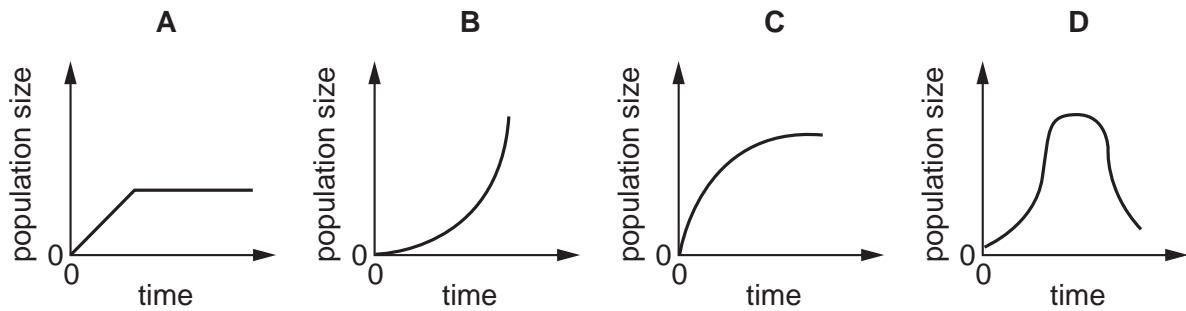
36 The diagram shows part of the **water** cycle.



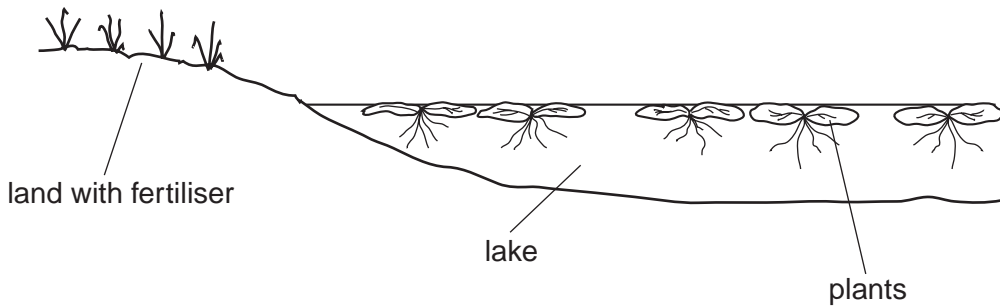
Which process is responsible for returning water vapour to the air at **P**?

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

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



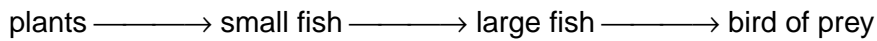
- 38 A farmer put some fertiliser on his field. Soon afterwards, there was a heavy storm and some of the fertiliser drained into a lake.



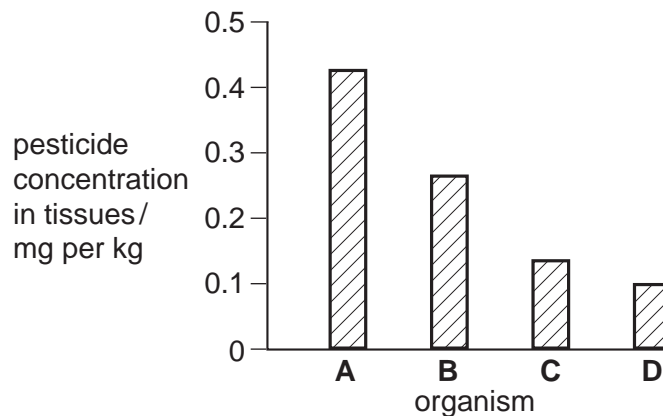
What is the effect of the fertiliser on the growth of the crop plants in the field and the plants in the lake?

|          | crop plants | lake plants |
|----------|-------------|-------------|
| <b>A</b> | decrease    | decrease    |
| <b>B</b> | decrease    | increase    |
| <b>C</b> | increase    | decrease    |
| <b>D</b> | increase    | increase    |

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



Which organism on the bar chart is the large fish?



- 40 Which activity will be **least** likely to lead to the extinction of species?

- A conservation
- B deforestation
- C use of herbicides
- D use of pesticides

