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Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2024**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

This document has **16** pages. Any blank pages are indicated.

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1 What is a characteristic of all living organisms?

A breathing

B egestion

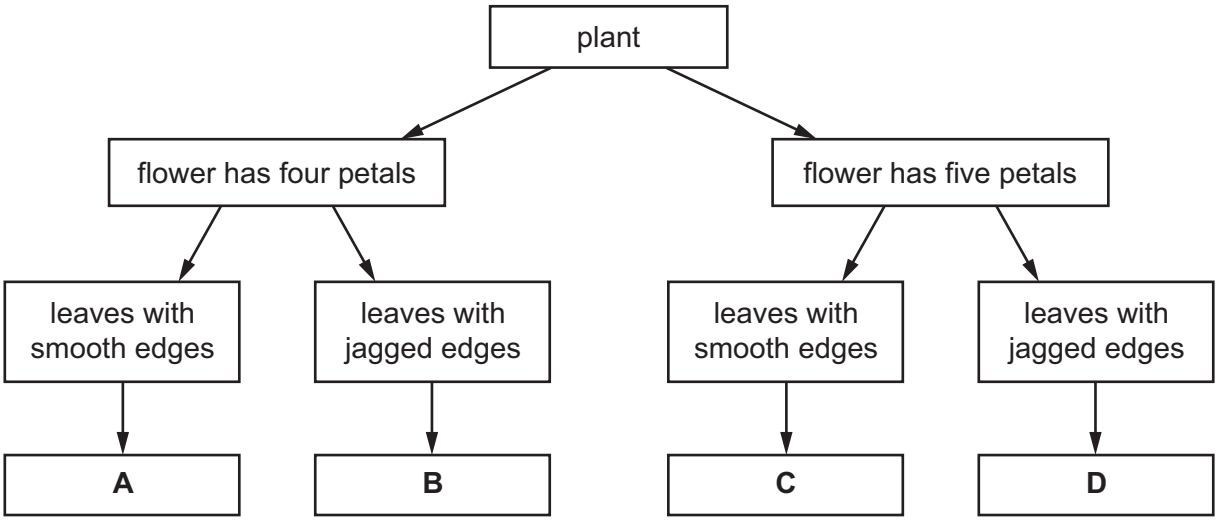
C excretion

D ingestion

2 The diagram shows a flowering plant.



A key can be used to identify the plant.
Which letter in the key identifies the flowering plant shown in the diagram?



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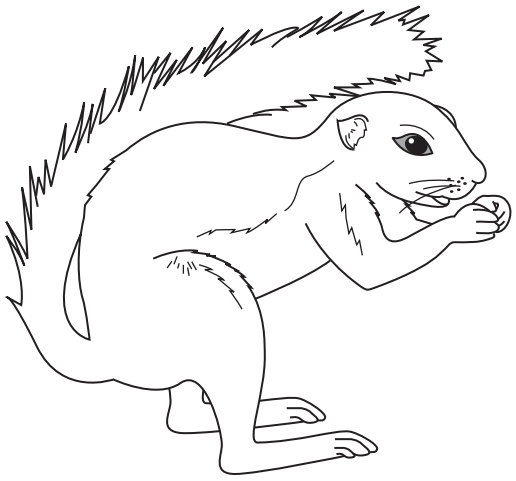
3 The drawing shows a ground squirrel.



Which feature identifies this animal as a mammal?

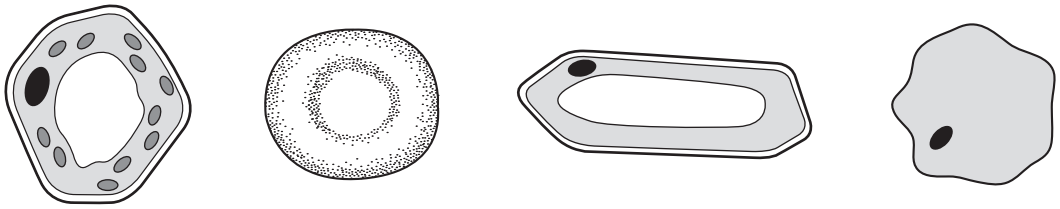
A eye

B four limbs

C fur

D tail

4 The diagram shows different types of cell.



Which structure do all these cells have?

A cell membrane

B cell wall

C chloroplast

D nucleus

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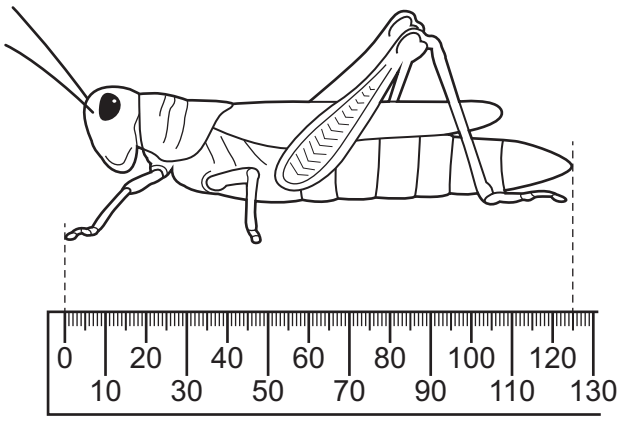
5 The drawing of the insect shown has a magnification of ×5.

The scale shown is in mm.



What is the actual size of the insect?

A 25 mm **B** 120 mm **C** 130 mm **D** 625 mm

6 Which factor would increase the rate of diffusion of oxygen molecules out of a photosynthesising leaf?

A decreasing the concentration gradient

B decreasing the distance over which diffusion occurs

C decreasing the surface area of the leaf

D decreasing the temperature

7 Which process only involves the movement of water through the partially permeable membrane of a cell?

A absorption

B evaporation

C osmosis

D transpiration

8 Which statement about active transport is correct?

A It does **not** require a cell membrane.

B It does **not** require energy from respiration.

C It moves particles from a lower concentration to a higher concentration.

D It moves water into and out of cells.

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9 DCPIP can be used to test for vitamin C in food. Lemon juice contains vitamin C.

When lemon juice is tested with DCPIP what are the results?

A starts blue, finishes colourless

B starts colourless, finishes blue

C stays blue

D stays colourless

10 Which reagent is used to test for the presence of protein in food?

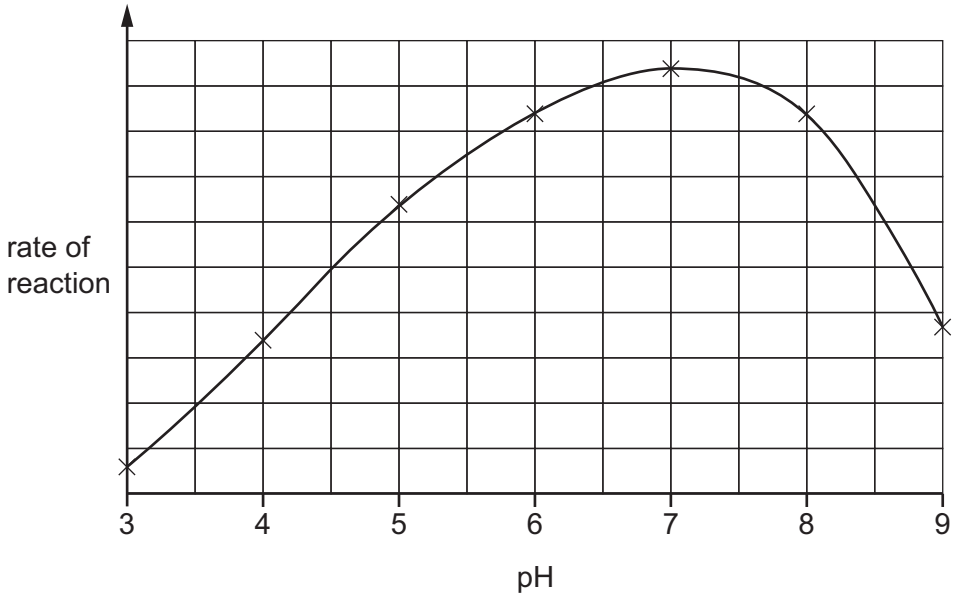
A Benedict's solution

B biuret solution

C ethanol

D iodine solution

11 The graph shows the effect of pH on the rate of reaction of an enzyme.



What does the graph show?

A The enzyme is destroyed at pH 9.

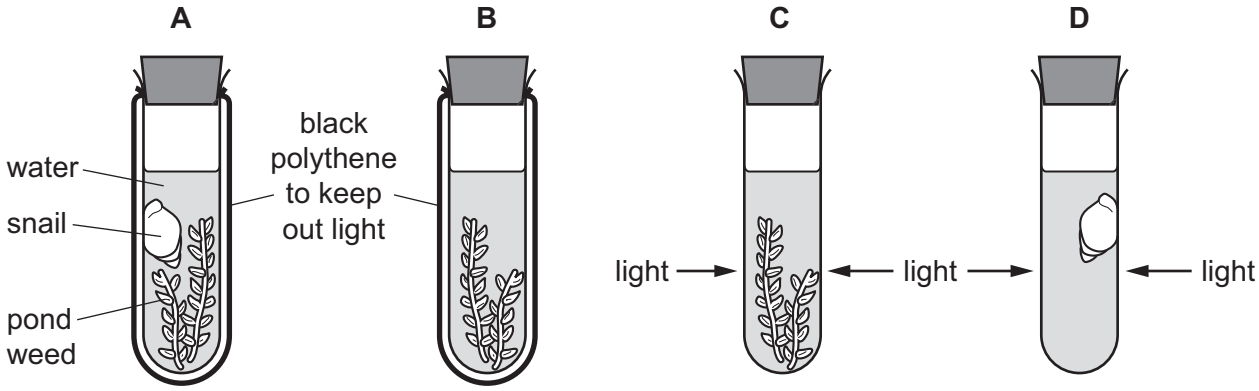
B The enzyme works best at pH 6.

C The rate of reaction halves as the pH changes from pH 5 to pH 7.

D The rate of reaction is the same at pH 5 and pH 8.5.

12 The diagram shows an experiment to investigate the balance between respiration and photosynthesis.

In which tube are photosynthesis and respiration taking place at the same time?

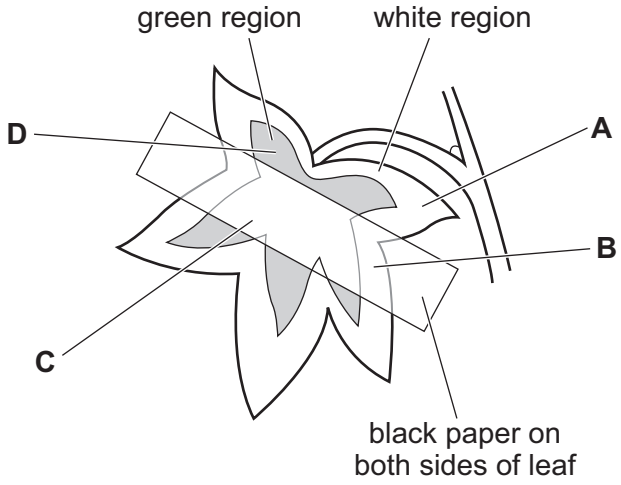


13 Some variegated leaves have white parts and green parts.

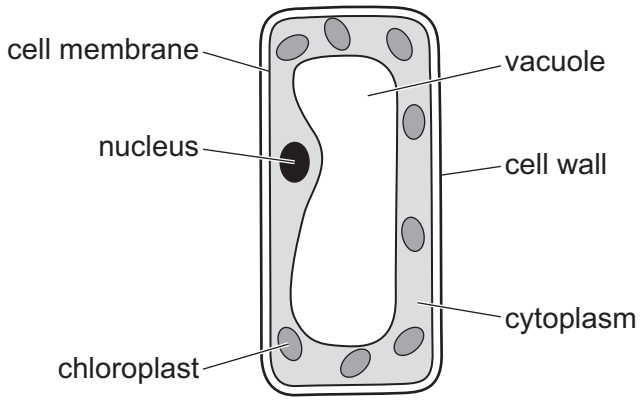
A plant with variegated leaves has the starch removed from its leaves by placing it in a dark cupboard for 48 hours.

Black paper is then fixed on one leaf as shown and the plant is exposed to light.

After 24 hours, which part of the leaf contains starch?



14 The diagram shows a plant cell.



Which type of cell is shown?

A cuticle cell

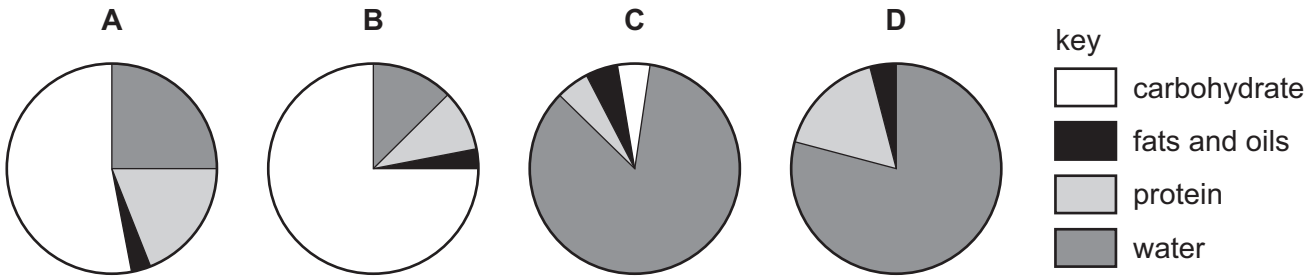
B epidermal cell

C palisade mesophyll cell

D spongy mesophyll cell

15 The pie charts show the composition of 100 g of four different foods.

Which food provides the **most** energy?



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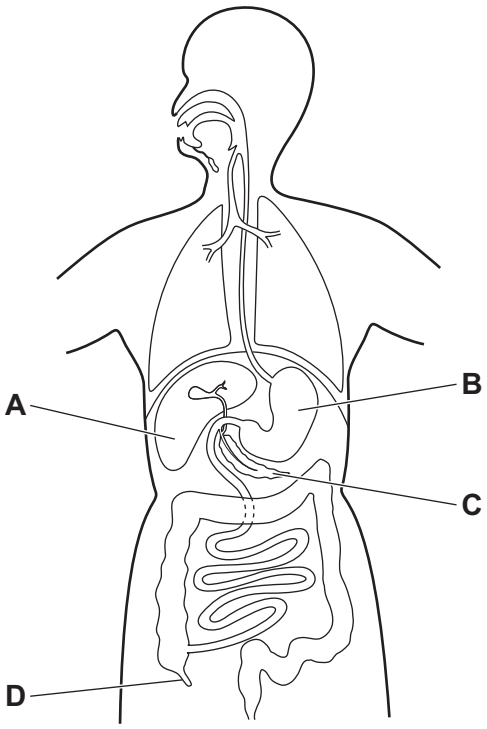
16 The diagram shows the digestive system and some of its associated organs.

Which label identifies the liver?



17 Which statements about teeth are correct?

1 Canine teeth are for chewing and grinding food.

2 Incisor teeth are for biting and cutting food.

3 Premolar teeth are for chewing and grinding food.

A 1, 2 and 3 **B** 2 and 3 only **C** 1 only **D** 2 only

18 What is the definition of chemical digestion?

A Large insoluble molecules are changed into smaller soluble molecules.

B Large soluble molecules are changed into smaller soluble molecules.

C Small insoluble molecules and ions are passed through the wall of the small intestine.

D Small soluble molecules and ions are passed through the wall of the small intestine.

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19 In which part of the alimentary canal does hydrochloric acid provide an acid pH for enzymes?

A colon

B duodenum

C ileum

D stomach

20 Which tissue has the function of providing support for a plant?

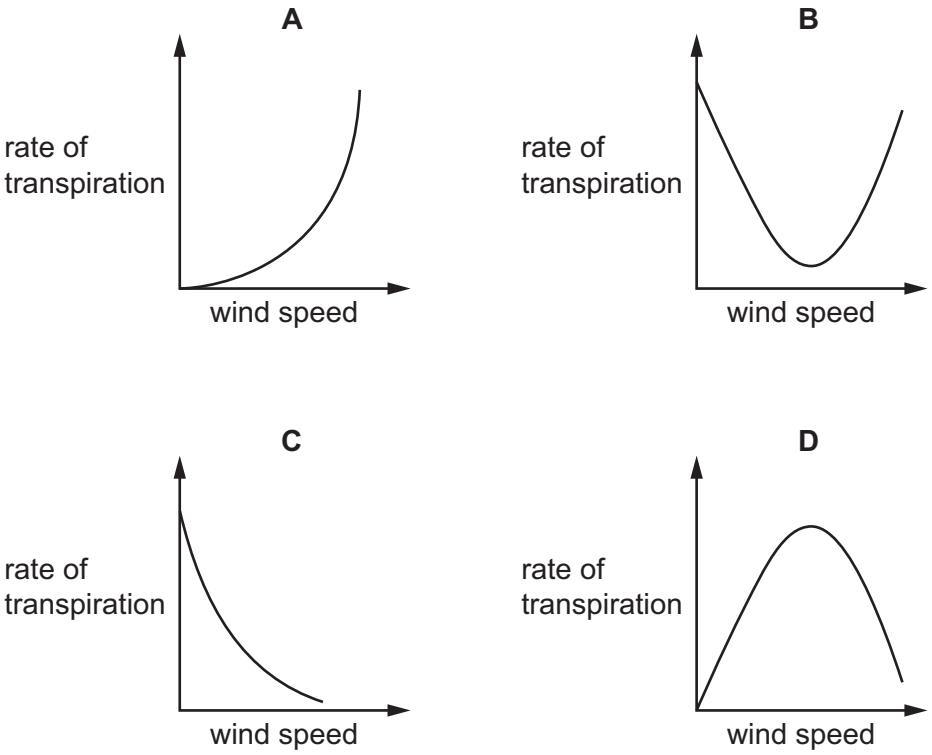
A epidermis

B mesophyll

C phloem

D xylem

21 Which graph shows the effect of increasing wind speed on the rate of transpiration?



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22 What ensures one-way flow of blood in the circulatory system?

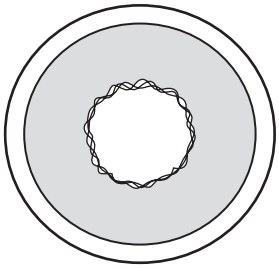
A atria

B septum

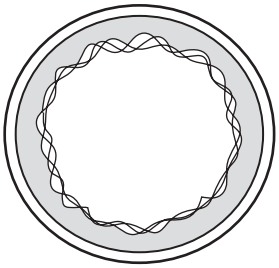
C valves

D ventricles

23 The diagrams show sections through three blood vessels, which are **not** drawn to the same scale. Some red blood cells are shown in vessel 3.



1



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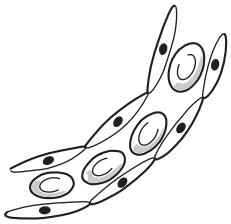

3

In which order will red blood cells flow through these vessels when travelling from the right ventricle to the left atrium of the heart?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 3 \rightarrow 1$ **D** $3 \rightarrow 1 \rightarrow 2$

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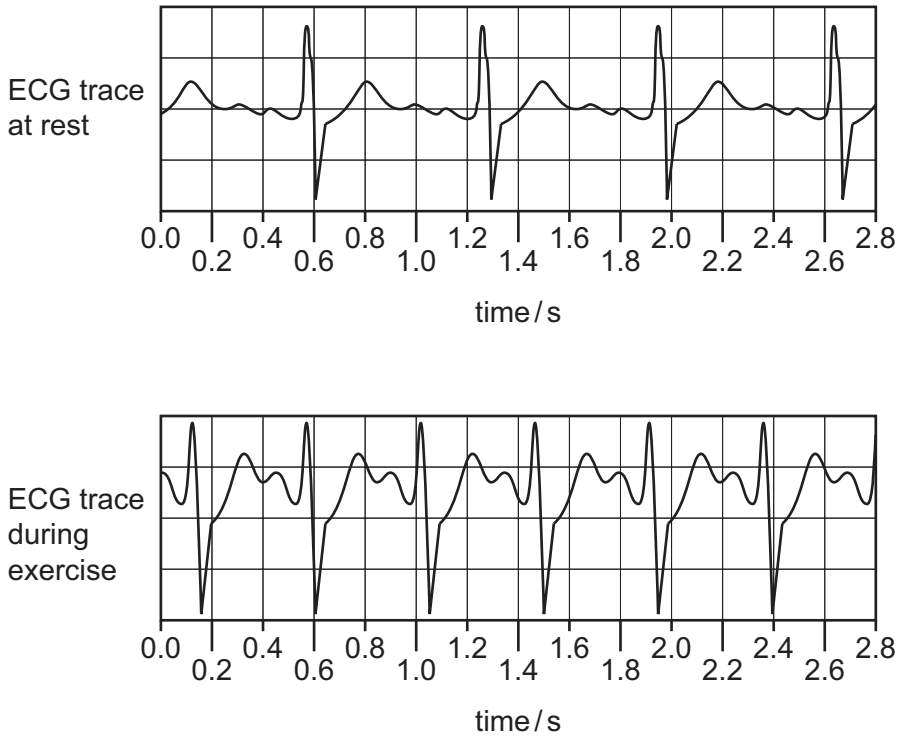
24 Scientists used an ECG trace to monitor the heart of a student at rest and during exercise.



What is the explanation for the difference in the ECG traces?

A During exercise the heart rate increases to transport more oxygen to muscles.

B During exercise the heart rate increases to breathe in more oxygen.

C During exercise the breathing rate increases to supply more oxygen to muscles.

D During exercise the breathing rate increases to breathe in more oxygen.

25 Statements about pathogens are given.

1 A pathogen is a disease-causing organism.

2 All pathogens are bacteria.

3 A pathogen can be transmitted by indirect contact through contaminated food.

Which statements are correct?

A 1 and 2 **B** 1 and 3 **C** 1 only **D** 3 only

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26 Which structure in the breathing system has the thinnest wall?

A alveolus

B bronchiole

C bronchus

D trachea

27 What are the products of aerobic respiration?

A carbon dioxide and lactic acid

B carbon dioxide and water

C carbon dioxide only

D lactic acid and water

28 What are the products of anaerobic respiration in yeast?

	alcohol	carbon dioxide	lactic acid
A	yes	yes	no
B	yes	no	yes
C	no	yes	no
D	no	no	yes

29 Some excretory products are listed.

1 carbon dioxide

2 excess ions

3 excess water

4 urea

Which products are excreted by the kidneys?

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

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30 A person touches a sharp object. The person immediately pulls their hand away.

Which row shows the correct description of the term?

	term	description
A	effector	pulling the hand away
B	receptor	muscles in the arm
C	response	sensory neurones in the skin
D	stimulus	sharp object touching the skin

31 Which structure focuses light on the retina?

A cornea

B iris

C lens

D optic nerve

32 Which statements describe adrenaline and its effects on the human body?

1 Pupil diameter becomes smaller.

2 Breathing rate decreases.

3 Heart rate increases.

4 Adrenaline is transported in the blood.

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

33 Which statements about drugs are correct?

1 Drugs affect or modify chemical reactions in the body.

2 Drugs called antibiotics can be used to kill bacteria.

3 Drugs called antibiotics can be used to kill viruses.

A 1 and 2 **B** 2 and 3 **C** 1 only **D** 2 only

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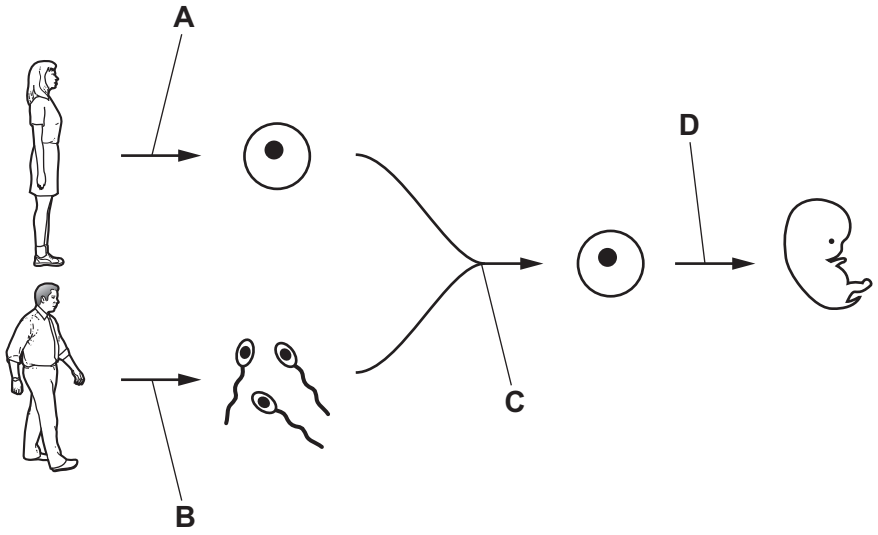
34 At which point in the diagram does fertilisation happen?



35 The seed shape of peas can be smooth or wrinkled. The allele for smooth is dominant and the allele for wrinkled is recessive.

Two heterozygous plants are crossed.

What is the expected percentage of offspring with a smooth shape?

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

36 Which human phenotype is caused by genes only?

A ABO blood group

B body mass

C foot size

D height

37 What is a correct ecological definition?

A A community is a group of organisms of one species living in the same area.

B An ecosystem is a community of organisms and their environment interacting together.

C A population is a group of different species living together.

D A species is all of the different organisms living in a community.

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38 Which action will **decrease** the population of an endangered animal species in a habitat?

A a ban on hunting this species

B building homes for people in this area

C educating people about this species

D using captive breeding programmes to release animals of this species into the habitat

39 Which row shows two reasons why bacteria are used in genetic modification?

	can make complex molecules	rate of reproduction
A	no	slow
B	yes	slow
C	no	rapid
D	yes	rapid

40 Which row shows uses of genetic modification?

	producing human proteins	producing crops that are resistant to insect pests	producing herbicide-resistant crops
A	no	no	yes
B	no	yes	no
C	yes	no	no
D	yes	yes	yes

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