**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

**BIOLOGY** **0610/12**

Paper 1 Multiple Choice (Core) **May/June 2018**

**45 minutes**

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

* 1 2 7 6 4 2 5 6 0 6 *

**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.
Do not use staples, paper clips, 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.
DO **NOT** WRITE IN ANY BARCODES.

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.
Electronic calculators may be used.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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


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

**A** all animals and all plants

**B** animals only

**C** arthropods and flowering plants only

**D** plants only

**2** The diagram shows an animal whose scientific name is *Falco peregrinus*.

To which species does it belong?

**A** bird

**B** *F. peregrinus*

**C** *Falco*

**D** vertebrate

**3** What kind of skin do amphibians have?

**A** dry without scales

**B** dry with scales

**C** moist without scales

**D** moist with scales

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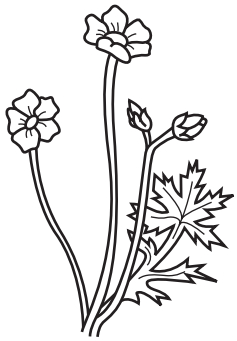
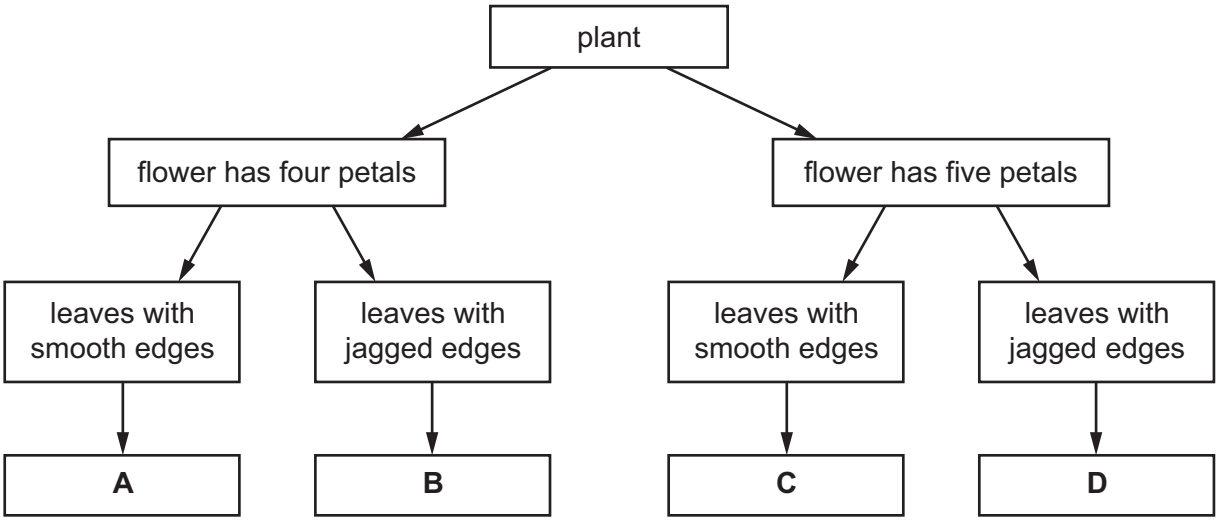
**4** The diagram shows a flowering plant.

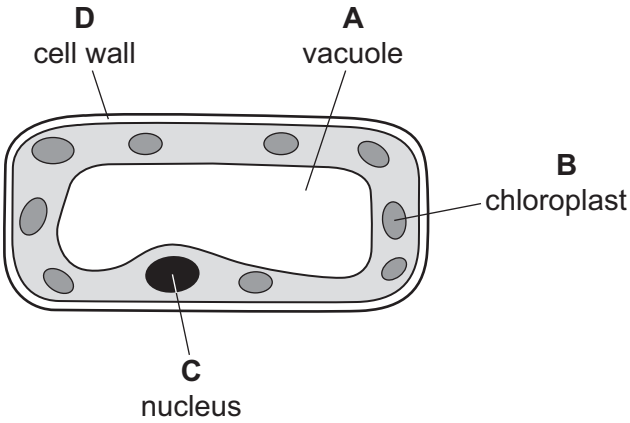


Use the key to identify the plant.




**5** The diagram shows a plant cell.

In which labelled part of the cell is sugar made?



**6** Why do some root cells have root hairs?

**A** for the maintenance of the temperature of the cell sap

**B** to increase the surface area of the cells

**C** to increase the volume of the cell sap

**D** to provide a place for cell nuclei

**7** The table shows the concentration of gases in a blood vessel and in an alveolus.

Which row shows the conditions that cause a gas produced in respiration to diffuse from the blood vessel into the alveolus?

| | gas produced | concentration in the blood vessel | concentration in the alveolus |
|---|---|---|---|
| **A** | carbon dioxide | low | high |
| **B** | carbon dioxide | high | low |
| **C** | oxygen | low | high |
| **D** | oxygen | high | low |

**8** Which part of a plant root hair is partially permeable?

**A** the cell sap

**B** the cell surface membrane

**C** the cell vacuole

**D** the cell wall

**9** The table shows the results of food tests carried out on a fruit.

| test | Benedict's | biuret | ethanol | iodine |
|---|---|---|---|---|
| result | positive | positive | negative | negative |

What did the fruit contain?

**A** fat and reducing sugar

**B** fat and starch

**C** protein and reducing sugar

**D** protein and starch

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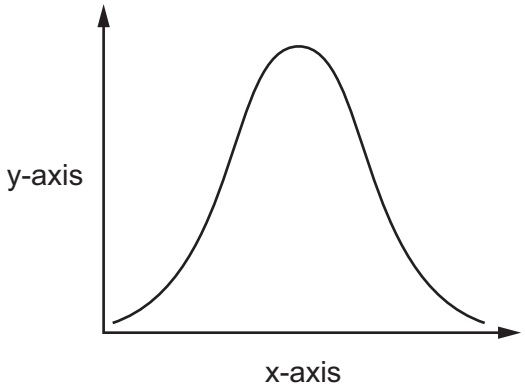
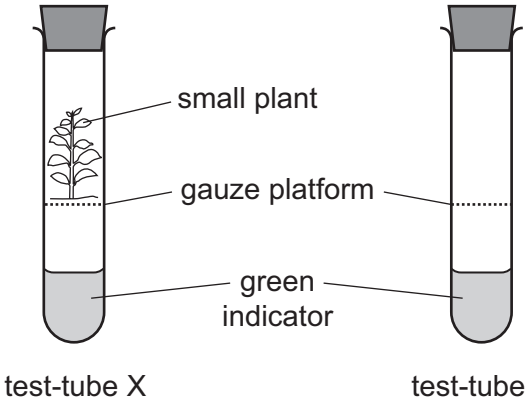
**10** An experiment was carried out to investigate the effect of pH on enzyme action. The graph shows the results.




What are the labels for the x-axis and the y-axis?

| | x-axis | y-axis |
|---|---|---|
| **A** | pH | rate of reaction |
| **B** | pH | time |
| **C** | rate of reaction | pH |
| **D** | time | pH |

**11** An experiment is set up as shown.




The green indicator turns yellow when the concentration of carbon dioxide increases. The green indicator turns blue when the concentration of carbon dioxide decreases.

After several hours, the indicator in test-tube X turned blue. The indicator in test-tube Y remained green.

Which process caused the colour change?

**A** germination

**B** photosynthesis

**C** respiration

**D** transpiration

**12** Why do plants need nitrate ions?

**A** for making amino acids

**B** for making fatty acids

**C** for making glucose

**D** for making starch

**13** In which part of the alimentary canal do chemical digestion and mechanical digestion take place?

**A** colon

**B** duodenum

**C** mouth

**D** oesophagus

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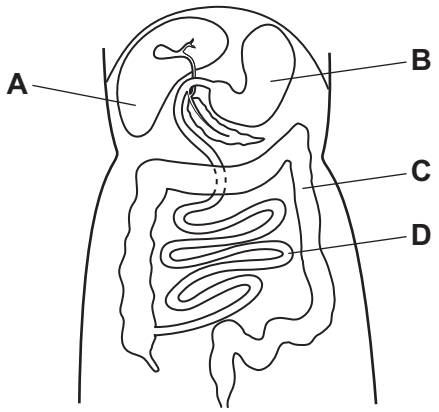
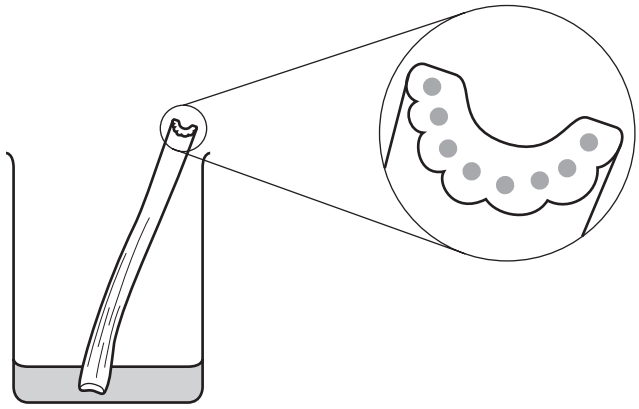
**14** The diagram shows part of the alimentary canal.

Where is most water absorbed?




**15** A celery stalk was placed in a beaker which contained a red stain. After 24 hours, the red stain appeared at the top of the celery stalk.



Which structures stained red?

**A** cortex cells

**B** mesophyll cells

**C** phloem

**D** xylem

**16** A student is investigating the effect of temperature on the rate of transpiration.

Which environmental conditions should be kept constant during this investigation?

| | humidity | light intensity | temperature | wind speed |
|---|---|---|---|---|
| **A** | ✓ | ✓ | ✓ | ✓ |
| **B** | ✓ | ✓ | ✗ | ✓ |
| **C** | ✗ | ✓ | ✗ | ✓ |
| **D** | ✗ | ✗ | ✓ | ✗ |

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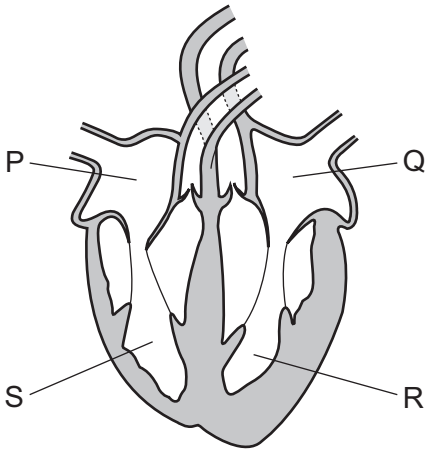
**[Turn over**

**17** The diagram shows the human heart.




In which order does blood pass through the chambers during a complete circuit of the body after it returns from the lungs?

**A** Q → R → S → P

**B** Q → R → P → S

**C** P → S → Q → R

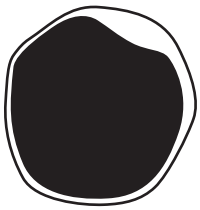
**D** P → S → R → Q

**18** The diagrams show some components of the blood of a mammal.

Which component causes the blood to start clotting?

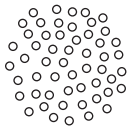
**A**

**B**



**C**

**D**



**19** The body produces mucus as a defence against diseases.

What type of defence is stomach acid?

| | cells | chemical barrier | mechanical barrier |
|---|---|---|---|
| **A** | ✓ | ✓ | ✓ |
| **B** | ✓ | ✗ | ✗ |
| **C** | ✗ | ✓ | ✗ |
| **D** | ✗ | ✗ | ✓ |

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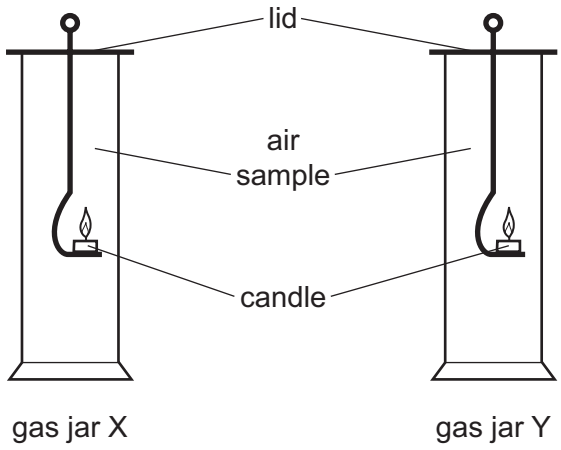
**20** A sample of expired air is collected in a gas jar. Another gas jar contains normal atmospheric air.

A lighted candle is placed inside each gas jar as shown. The time taken for each flame to go out is measured. As the candles burn they use up the oxygen available in the jar.




The table shows the results of this experiment.

| gas jar | time for candle flame to go out / s |
|---|---|
| X | 15 |
| Y | 9 |

What is an explanation of the difference between the results in jars X and Y?

**A** Jar X contains atmospheric air which has more carbon dioxide.

**B** Jar X contains expired air which has more carbon dioxide.

**C** Jar Y contains atmospheric air which has less oxygen.

**D** Jar Y contains expired air which has less oxygen.

**21** Which row describes anaerobic respiration?

| | energy released | oxygen required | waste products |
|---|---|---|---|
| **A** | a little | no | lactic acid |
| **B** | a little | yes | carbon dioxide and water |
| **C** | a lot | no | lactic acid |
| **D** | a lot | yes | carbon dioxide and water |

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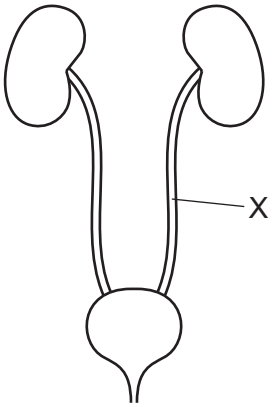
**[Turn over**

**22** The diagram shows the excretory system.




What is structure X?

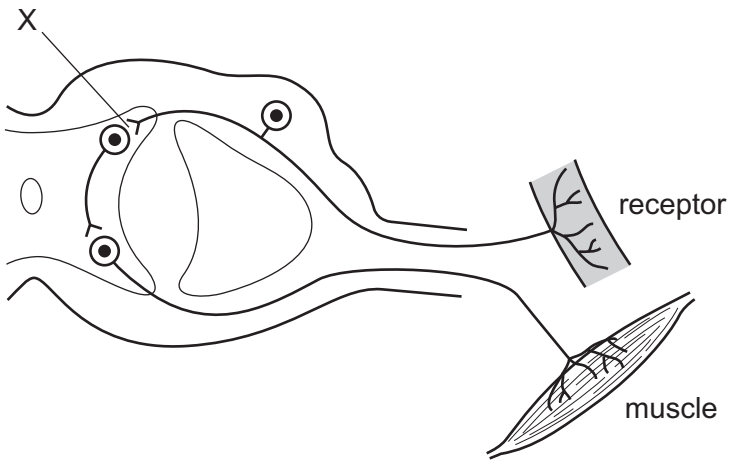
**A** bladder

**B** kidney

**C** ureter

**D** urethra

**23** The diagram shows structures in a reflex arc.




What is X?

**A** effector

**B** relay neurone

**C** sensory neurone

**D** synapse

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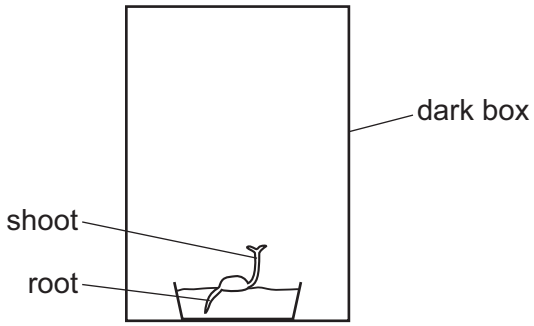
**24** Which row describes the effect of the hormone adrenaline on breathing rate, pulse rate and pupil size?

| | breathing rate | pulse rate | pupil size |
|---|---|---|---|
| **A** | decrease | decrease | larger |
| **B** | decrease | increase | smaller |
| **C** | increase | decrease | smaller |
| **D** | increase | increase | larger |

**25** The diagram shows a seedling growing inside a dark box.




What type of responses affect the direction of growth of the root and the shoot in this experiment?

| | response by the root | response by the shoot |
|---|---|---|
| **A** | gravitropism | gravitropism |
| **B** | gravitropism | phototropism |
| **C** | phototropism | gravitropism |
| **D** | phototropism | phototropism |

**26** What is the definition of a drug?

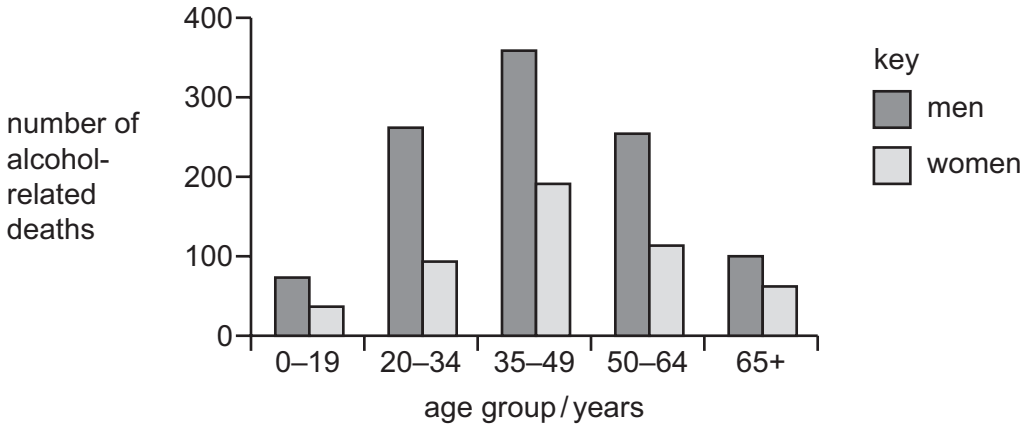
**A** any illegal substance taken into the body

**B** any substance taken into the body

**C** any substance taken into the body that modifies or affects chemical reactions in the body

**D** any substance taken into the body which is not a medicine

**27** The graph shows the number of alcohol-related deaths in men and women between the years 2001 and 2005 in one country.




Which conclusion is supported by the data in the graph?

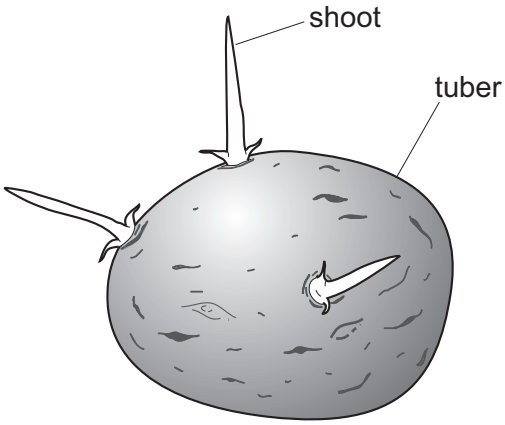
**A** All alcohol-related deaths increase with age.

**B** Men in the 35–49 year old age group are most likely to die due to alcohol-related reasons.

**C** Men in the 65+ age group are least likely to die due to alcohol-related reasons.

**D** Women are more likely to die due to alcohol-related reasons than men.

**28** The diagram shows a potato tuber that developed from the stem of a parent potato plant. Three shoots are starting to grow from the tuber.




How do the genotypes of the shoots compare with the genotypes of the tuber and of the parent?

| | genotype of tuber | genotype of parent |
|---|---|---|
| **A** | is different to the shoots | is different to the shoots |
| **B** | is different to the shoots | is identical to the shoots |
| **C** | is identical to the shoots | is different to the shoots |
| **D** | is identical to the shoots | is identical to the shoots |

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**29** The list shows various terms used in sexual reproduction in organisms.

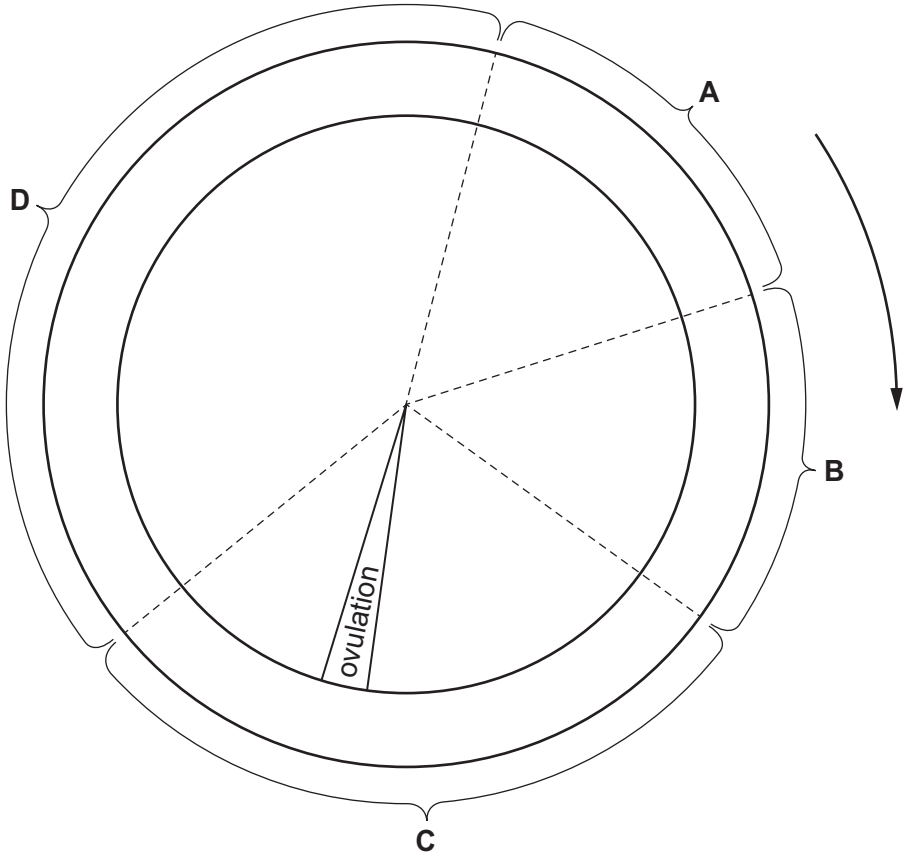
1 male gamete
2 female gamete
3 ovule
4 ovary
5 filament
6 fertilisation
7 haploid

Which terms are only used in sexual reproduction in plants?

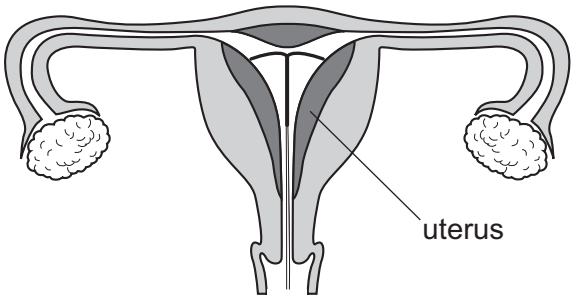
**A** 1 and 7 **B** 2 and 4 **C** 2 and 6 **D** 3 and 5

**30** The diagram shows stages of a menstrual cycle.

During which stage does menstruation occur?



**31** The diagram shows part of the female reproductive system with a birth control device in place.




Which birth control device is being used?

**A** chemical implant

**B** diaphragm

**C** femidom

**D** IUD

**32** Which chromosomes can be found in a single sperm?

**A** X and X **B** X and Y **C** X or X **D** X or Y

**33** Which term is used for an organism that has two different alleles of a particular gene?

**A** dominant

**B** heterozygous

**C** homozygous

**D** recessive

**34** What is an adaptive feature of an organism?

**A** any feature that is changed by the environment

**B** any feature that helps an organism to survive and reproduce

**C** any feature that shows continuous variation

**D** any inherited feature than an organism has

**35** What is required for natural selection to occur?

**A** genetic variation between individuals

**B** humans selecting desirable characteristics

**C** no competition between individuals or resources

**D** offspring produced by asexual reproduction

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**36** What is the principal source of energy for most food chains?

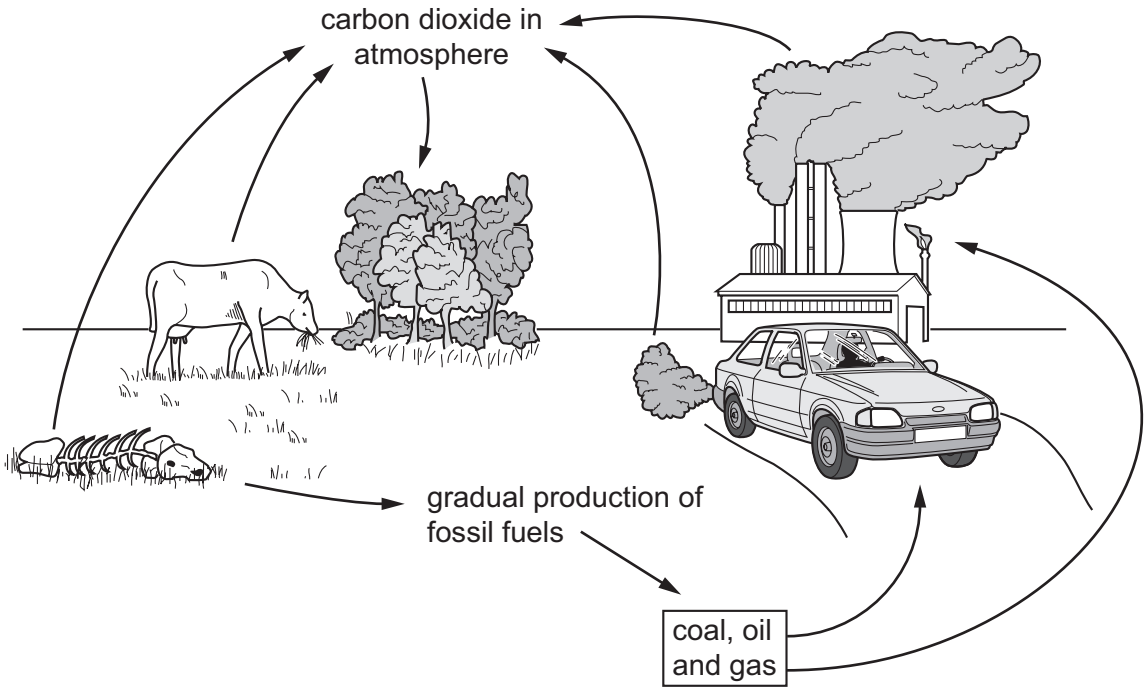
**A** carbon dioxide gas

**B** glucose

**C** oxygen

**D** sunlight

**37** The diagram shows part of the carbon cycle.




Which process is missing from the diagram?

**A** combustion

**B** photosynthesis

**C** plant respiration

**D** decomposition

**38** Genetic engineering has been used to produce human insulin.

Into which type of cell were the human genes for insulin inserted?

**A** animal

**B** bacterial

**C** fungal

**D** human

**39** What are reasons for using chemical fertilisers in food production?

| | increase pollution in rivers and lakes | increase crop yields | reduce competition between crops and weeds |
|---|---|---|---|
| **A** | ✓ | ✓ | ✓ |
| **B** | ✗ | ✓ | ✗ |
| **C** | ✓ | ✗ | ✗ |
| **D** | ✗ | ✗ | ✓ |

**40** As well as carbon dioxide, which other gas is mainly responsible for the enhanced greenhouse effect?

**A** methane

**B** oxygen

**C** ozone

**D** sulfur dioxide

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