



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/12

Paper 1 Multiple Choice (Core)

February/March 2018

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, 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 **15** printed pages and **1** blank page.

1 What is a characteristic of all living organisms?

- A breathing
- B egestion
- C excretion
- D ingestion

2 What are the characteristics of fish?

| | maintain constant body temperature | external ears present | jelly-covered eggs | scales |
|----------|------------------------------------|-----------------------|--------------------|--------|
| A | ✓ | ✓ | x | x |
| B | ✓ | x | ✓ | ✓ |
| C | x | ✓ | x | x |
| D | x | x | ✓ | ✓ |

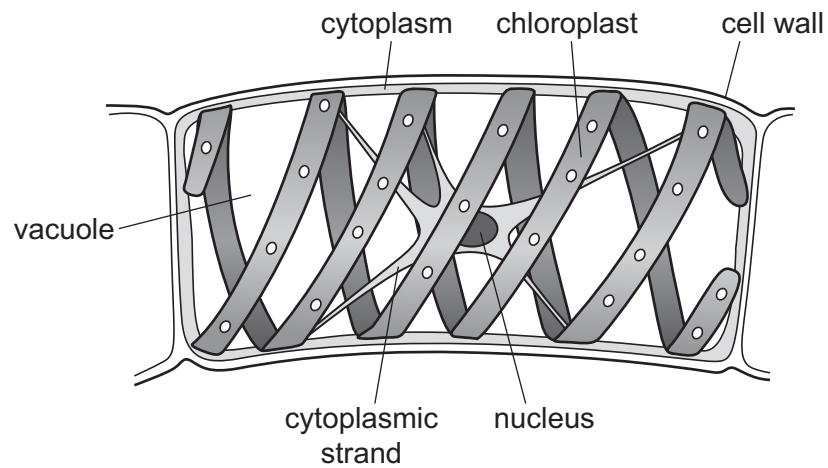
3 The diagram shows part of a flowering plant.



Using the key, identify this plant.

- 1 three petals go to 2
- more than three petals go to 3
- 2 leaves longer than they are wide **A**
- leaves wider than they are long **B**
- 3 leaves parallel-veined **C**
- leaves not parallel-veined **D**

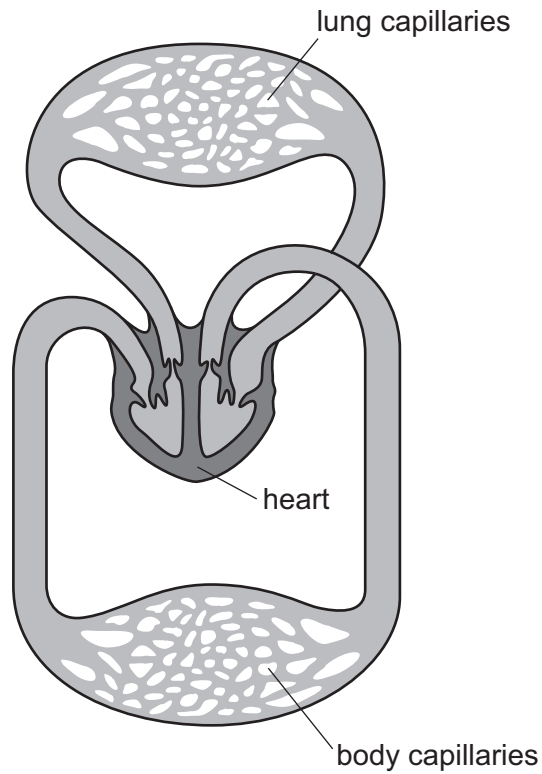
4 The diagram shows a single cell from an organism called *Spirogyra*.



Which features does *Spirogyra* share with plant cells?

| | cell wall | chloroplast | cytoplasm | nucleus | vacuole |
|----------|-----------|-------------|-----------|---------|---------|
| A | ✓ | ✓ | ✓ | ✓ | ✓ |
| B | ✓ | ✓ | ✗ | ✗ | ✓ |
| C | ✓ | ✗ | ✓ | ✓ | ✗ |
| D | ✗ | ✓ | ✓ | ✗ | ✓ |

5 Which level of organisation is shown in the diagram?

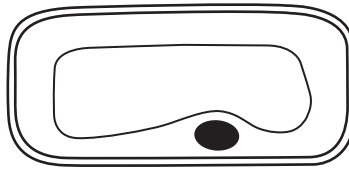


- A organ
B organism
C organ system
D tissue
- 6 An egg measured 6.5 cm in diameter. A student made a drawing of this egg and the diameter was measured as 19.5 cm.

What was the magnification of the drawing?

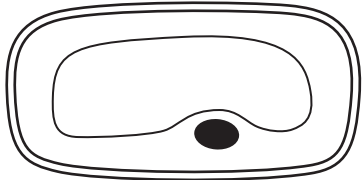
- A $\times 0.3$ B $\times 3.0$ C $\times 6.5$ D $\times 300$

7 The diagram shows a plant cell.

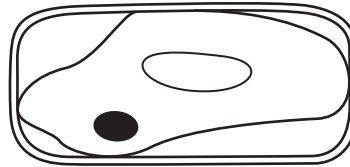


What is the appearance of this cell after it has been placed in pure water for 30 minutes?

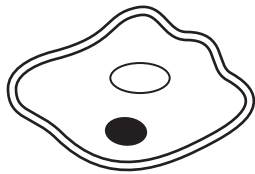
A



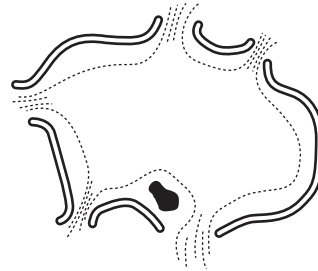
B



C



D



8 When a food substance is tested with iodine solution, which colour shows the presence of starch?

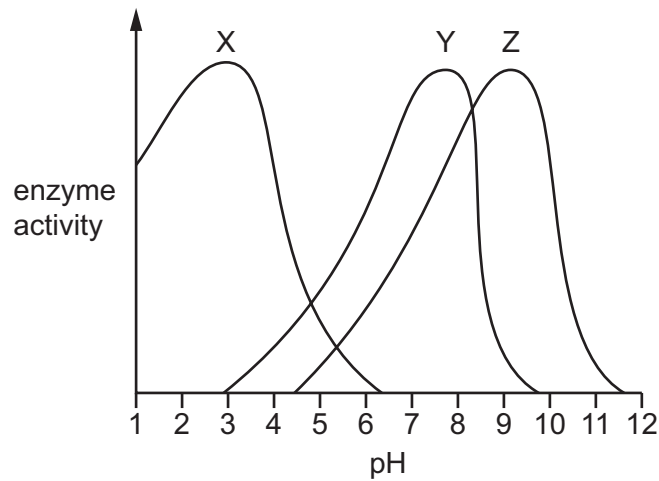
A blue-black

B brown

C orange

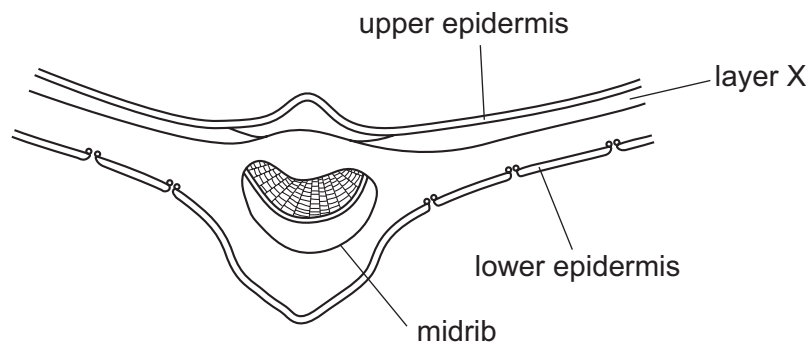
D purple

- 9 The graph shows the activity of three digestive enzymes at differing pH levels.

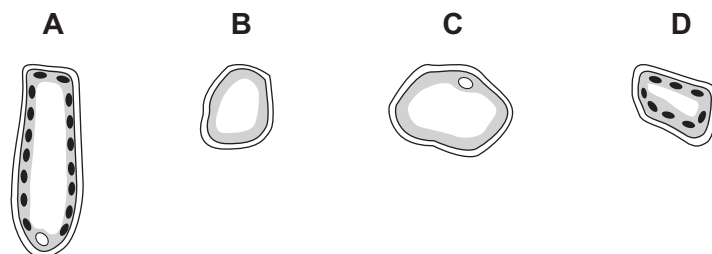


Which statement is correct?

- A Enzymes X and Y are both active at pH7.
 - B Enzymes X and Z are both active at pH4.
 - C Enzymes Y and Z are both active at pH4.
 - D Enzymes Y and Z are both active at pH8.
- 10 The diagram shows a cross-section of part of a leaf.



Which type of cell is found in layer X?

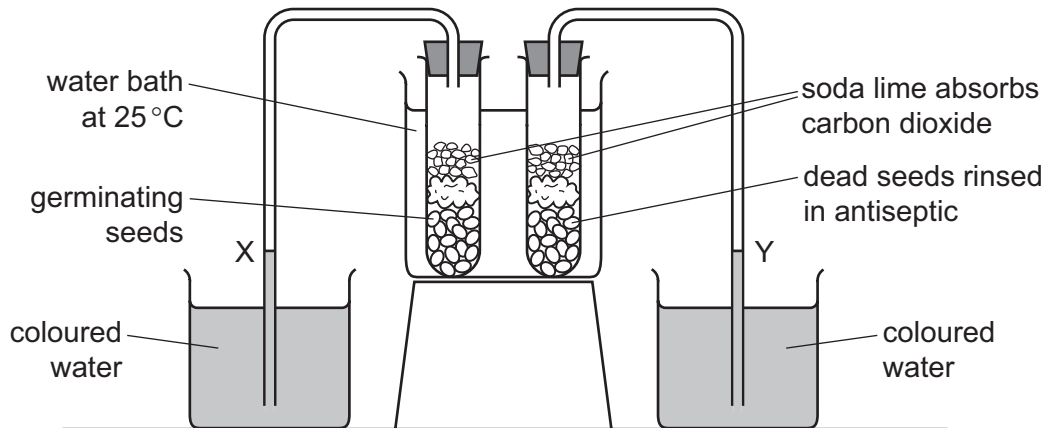


- 11 Which molecule contains magnesium?
- A chlorophyll
 - B fat
 - C glucose
 - D starch
- 12 In which part of the body of a mammal does mechanical digestion occur?
- A gall bladder
 - B liver
 - C mouth
 - D pancreas
- 13 In which order does water pass through these tissues in a plant?
- A mesophyll → xylem → root cortex
 - B root cortex → mesophyll → xylem
 - C root cortex → xylem → mesophyll
 - D xylem → mesophyll → root cortex
- 14 Which part of the blood contains haemoglobin?
- A plasma
 - B platelets
 - C red blood cells
 - D white blood cells
- 15 The body has defences to protect itself from diseases.
- What is a mechanical barrier to diseases?
- A hairs in the nose
 - B plasma
 - C stomach acid
 - D white blood cells

16 Compared with inspired air, which description of expired air is correct?

- A It has less oxygen and less carbon dioxide.
- B It has less oxygen and more carbon dioxide.
- C It has more oxygen and less carbon dioxide.
- D It has more oxygen and more carbon dioxide.

17 An experiment is set up to investigate the uptake of oxygen by germinating seeds.



What happens to the levels of the coloured water at X and Y?

| | X | Y |
|----------|-------|-----------|
| A | falls | rises |
| B | falls | unchanged |
| C | rises | falls |
| D | rises | unchanged |

18 Which organ regulates the amount of water in a mammal's body?

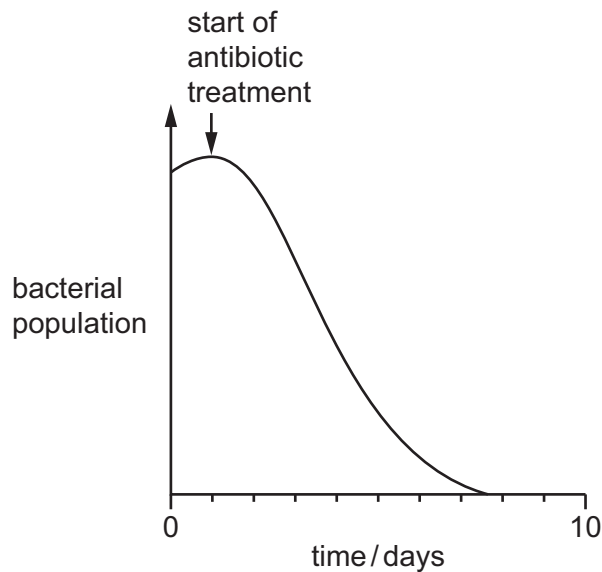
- A kidney
- B liver
- C lungs
- D skin

19 A boy accidentally touches a very hot object and immediately takes his hand away.

In this reflex action, what is the effector?

- A a heat receptor in his hand
- B a motor neurone
- C a muscle in his arm
- D the spinal cord

20 The graph shows the effect of an antibiotic treatment on bacterial populations in the blood.



Which conclusion can be drawn from the graph?

- A Antibiotics are effective against viral and bacterial infections.
- B Antibiotics cause meiosis in bacteria.
- C Antibiotics take ten days to kill all bacteria.
- D Before the start of antibiotic treatment the bacterial population was rising.

21 Drinking alcohol before driving a car is dangerous.

Which statement correctly explains why drinking alcohol and driving is dangerous?

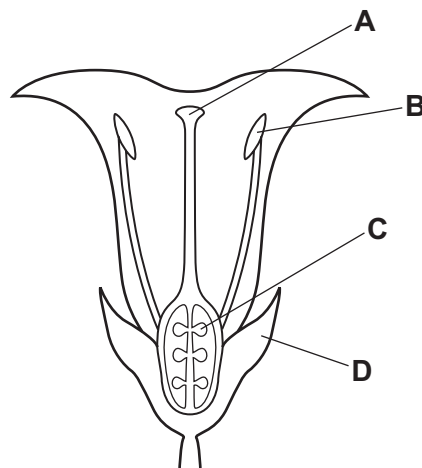
- A Alcohol increases reaction time.
- B Alcohol can cause liver damage.
- C Alcohol is a drug.
- D Alcohol is addictive.

22 Which statement about sexual reproduction is correct?

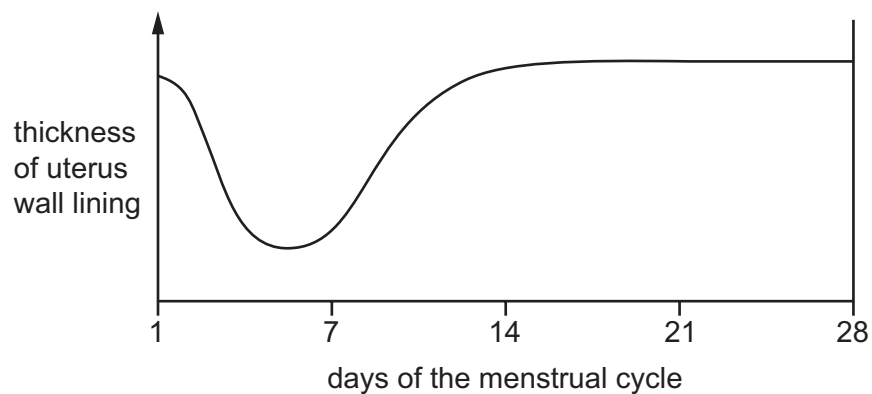
- A It is a process that involves the fusion of two nuclei.
- B It always produces genetically identical offspring.
- C No zygote is formed.
- D There is no fertilisation.

23 The diagram shows a cross-section of a flower.

Where does fertilisation take place?



24 The graph shows changes in the thickness of the lining of the uterus wall during a menstrual cycle.



Which day is the last day of menstruation?

- A 4
- B 8
- C 16
- D 20

- 25 The table shows the percentage of pregnancies in four groups of women. Each group used a different method of contraception.

| method of contraception | percentage of pregnancies |
|--------------------------------|---------------------------|
| the contraceptive pill | 1 |
| monitoring body temperature | 14 |
| diaphragm | 7 |
| male sterilisation (vasectomy) | 0 |

Which contraceptive method was the **least** effective?

- A barrier
 B chemical
 C natural
 D surgical
- 26 Which sex chromosomes in the egg and the sperm will produce a male child?

| | sex chromosome in egg | sex chromosome in sperm |
|----------|-----------------------|-------------------------|
| A | X | X |
| B | X | Y |
| C | Y | X |
| D | Y | Y |

- 27 Cell division has the following functions.

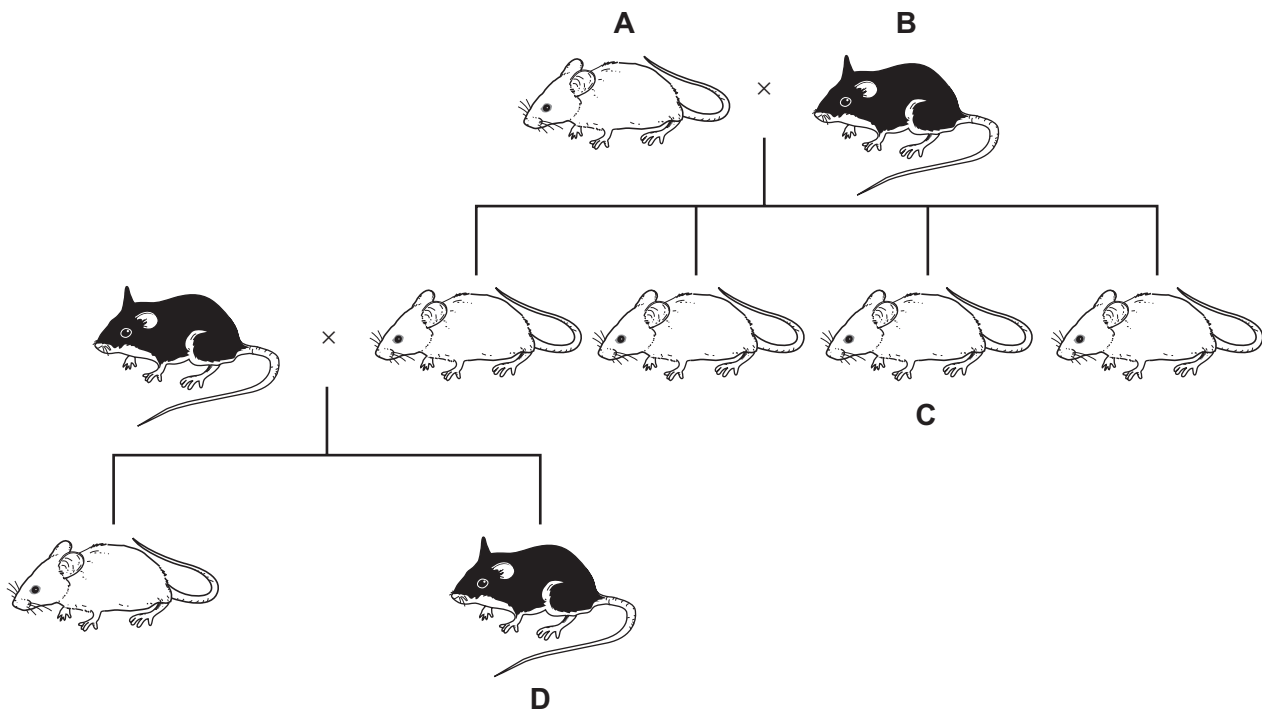
- 1 asexual reproduction
- 2 growth
- 3 production of gametes
- 4 repair of damaged tissue
- 5 replacement of cells

Which functions are specific to mitosis?

- A 1, 2, 3 and 4
 B 1, 2, 4 and 5
 C 2, 3 and 4 only
 D 3, 4 and 5 only

28 The chart shows the inheritance of fur colour in a small mammal.

If the allele for white fur is dominant, which animal **must** be heterozygous for the gene controlling fur colour?



29 Four phenotypes of a group of people were studied.

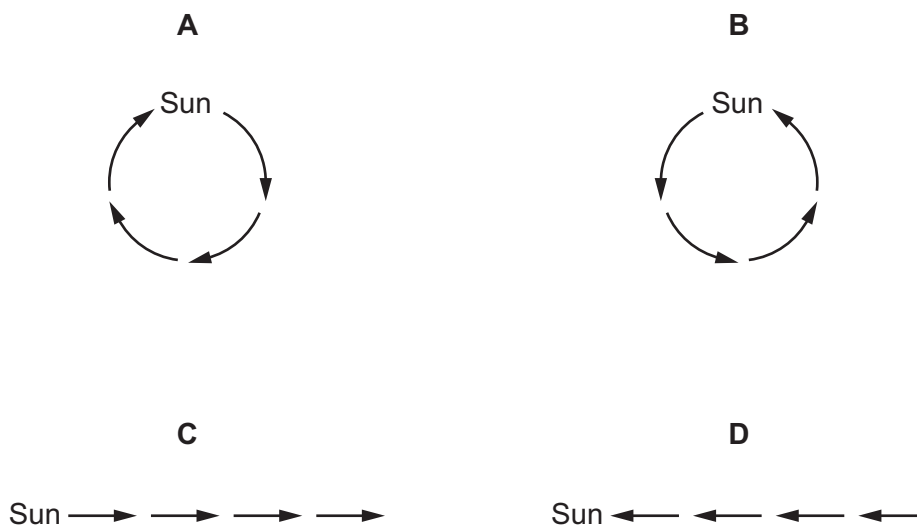
Which phenotype will show discontinuous variation?

- A blood group
- B foot size
- C height
- D weight

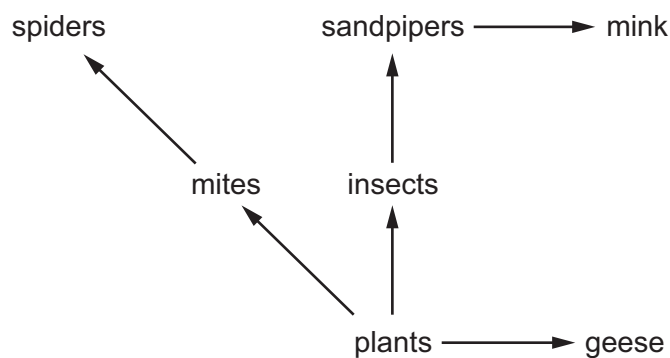
30 Which statement about selective breeding is correct?

- A It does not involve humans.
- B It involves a struggle for survival.
- C It always involves one parent.
- D It involves parents that possess desirable features.

31 Which diagram shows how energy flows through an ecosystem?



32 The diagram shows part of a food web.

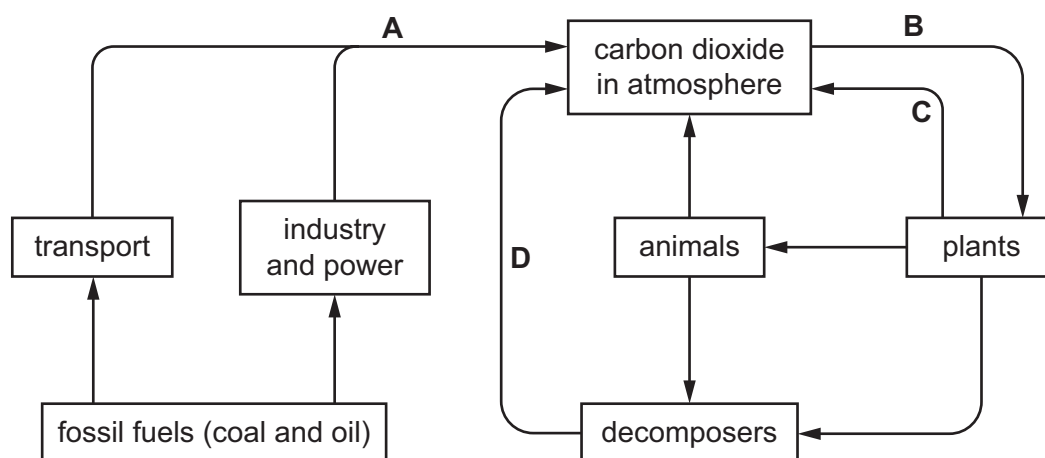


Which members of the food web are examples of producers, herbivores and carnivores?

| | producers | herbivores | carnivores |
|----------|-----------|------------|------------|
| A | insects | sandpipers | mink |
| B | geese | mites | sandpipers |
| C | plants | geese | spiders |
| D | plants | sandpipers | insects |

33 The diagram shows part of the carbon cycle.

Which process reduces the carbon dioxide content of the atmosphere?



34 Which factor will cause a decrease in population size?

- A decreased food supply
- B decreased predation
- C decreased disease
- D decreased death rate

35 Some of the characteristics of bacteria are listed.

- 1 can make complex molecules
- 2 can reproduce quickly
- 3 have cytoplasm
- 4 may cause diseases

Which characteristics make bacteria useful in biotechnology and genetic engineering?

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

36 What is a product of anaerobic respiration in yeast?

- A biological washing powders
- B ethanol
- C fruit juice
- D human insulin

37 Which statement about genetic engineering is correct?

- A** It involves choosing which individual organisms are used for breeding.
- B** It is always done using genes from the same species.
- C** It produces a new combination of genes.
- D** It produces exact copies of individual organisms.

38 Deforestation has undesirable effects on the environment.

Which effect makes the greatest contribution to global warming?

- A** extinction of species
- B** increased carbon dioxide
- C** increased flooding
- D** loss of soil by erosion

39 Methane is a gas that contributes to the greenhouse effect.

Which human activity is a source of methane?

- A** deforestation
- B** growing rice
- C** using fertilisers
- D** using herbicides

40 Which stage in the treatment of sewage removes large floating objects, such as plastic bags?

- A** aeration
- B** discharge
- C** screening
- D** sedimentation

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