Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2016**

45 minutes

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

* 9 3 4 6 9 8 7 8 4 4 *

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.

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

This document consists of **18** printed pages and **2** blank pages.

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1 The equation shows a chemical reaction that occurs in living organisms.

glucose + oxygen → carbon dioxide + water

Which of these characteristics of living organisms is this equation associated with?

	respiration	nutrition
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

2 What is a correct way of naming an organism using the binomial system?

A *Common buttercup*

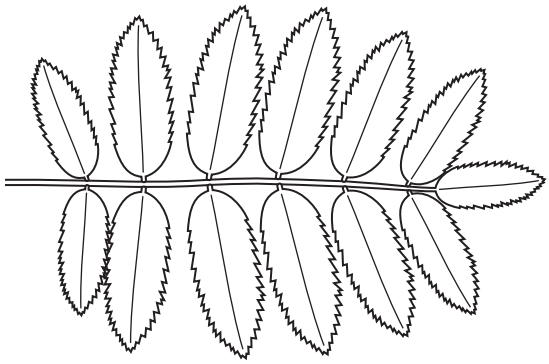
B ranunculus acris

C *Ranunculus acris*

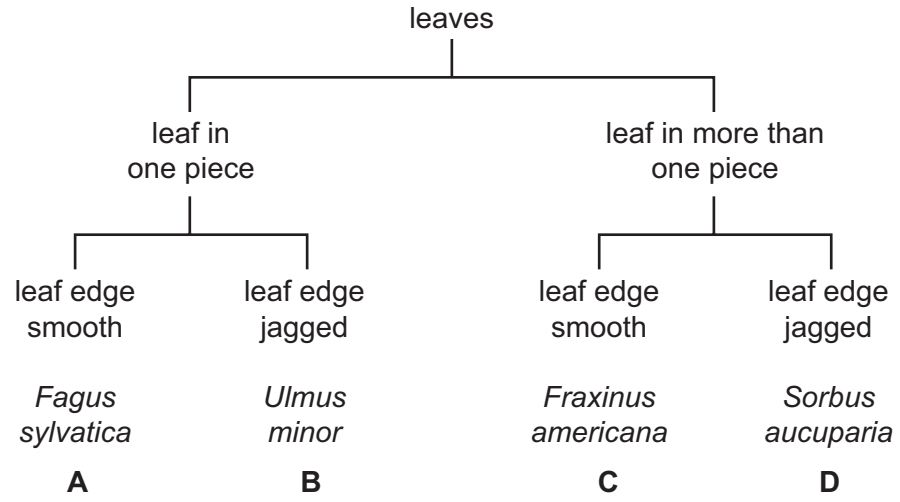
D Ranunculus sp.

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3 The diagram shows a leaf.



Use the key to identify the plant to which the leaf belongs.



4 A palisade cell and a nerve cell are observed under a light microscope.

Only the palisade cell has a

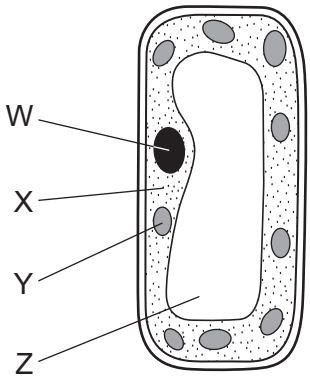
A cell membrane.

B cytoplasm.

C nucleus.

D vacuole.

5 The diagram shows a palisade mesophyll cell from a green leaf.



In which labelled part does photosynthesis occur and where is starch stored?

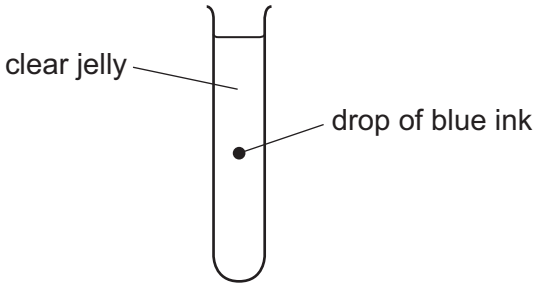
	photosynthesis occurs	starch is stored
A	X	W
B	X	Z
C	Y	X
D	Y	Y

6 Which row describes a root hair cell?

	allows water to pass into the plant	increases the surface area of the root	loses water by transpiration
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

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7 The diagram shows a test-tube containing clear jelly. A drop of blue ink is injected into the middle of the jelly.



The blue colour of the ink spreads throughout the jelly.

By which process does the blue ink spread through the jelly?

A active transport

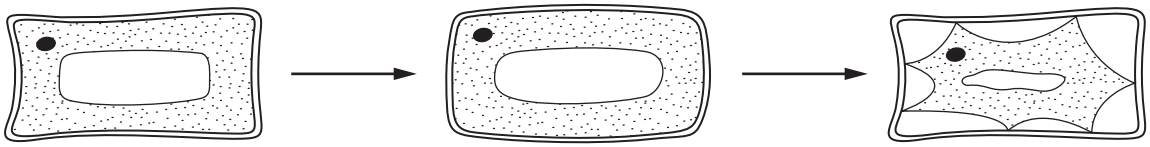
B catalysis

C diffusion

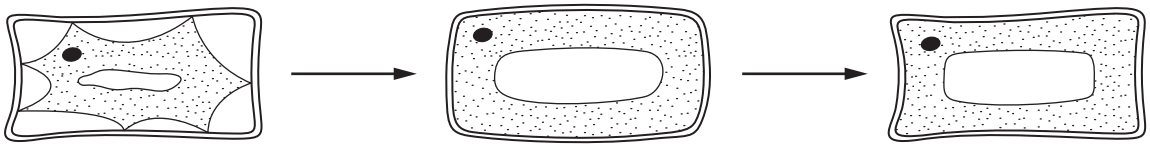
D osmosis

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

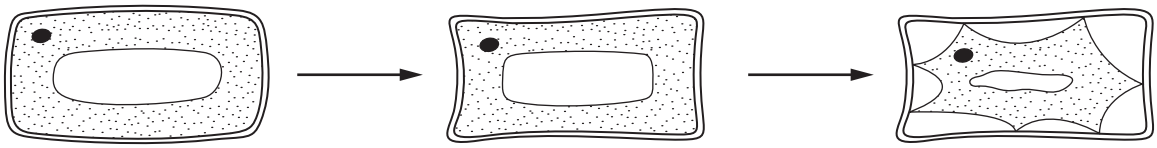
A



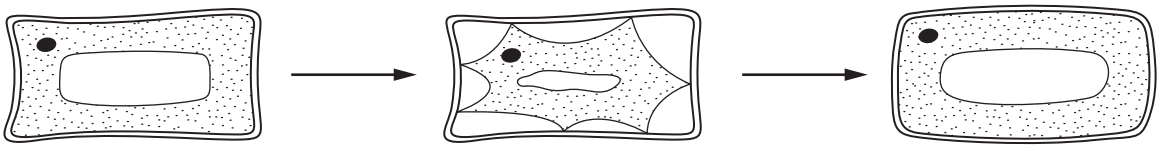
B



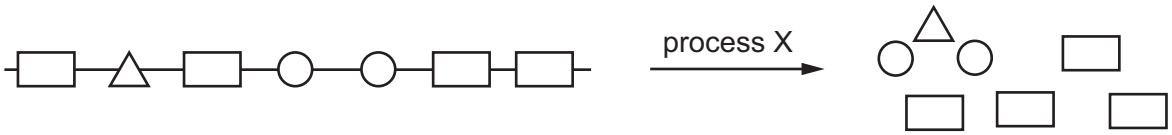
C



D



9 The diagram shows a large food molecule changing into smaller molecules.



What is process X?

A absorption

B chewing

C digestion

D secretion

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

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

	pH	temperature / °C
A	2	27
B	2	37
C	7	27
D	7	37

11 Plants manufacture their own supplies of carbohydrate.

What are the raw materials and the waste product of this process?

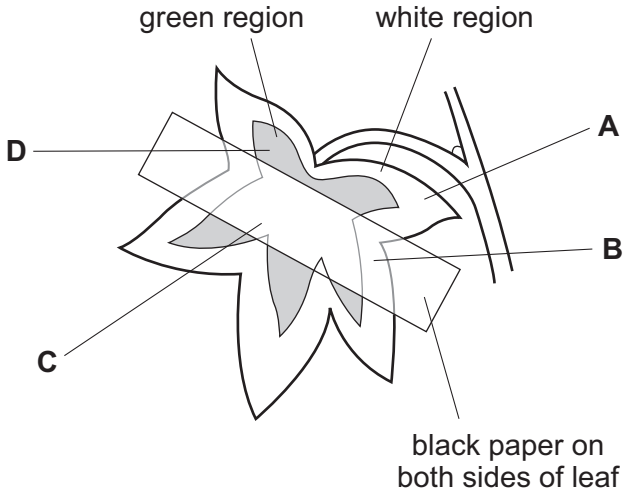
	raw materials	waste product
A	carbon dioxide and chlorophyll	oxygen
B	carbon dioxide and water	oxygen
C	oxygen and chlorophyll	carbon dioxide
D	oxygen and water	carbon dioxide

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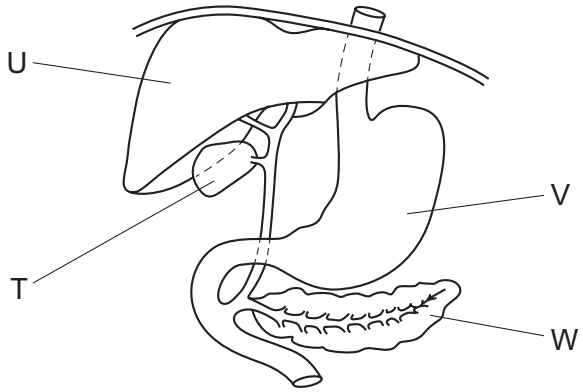
12 A plant with variegated leaves has the starch removed from its leaves by placing it in a dark cupboard for 48 hours.

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?



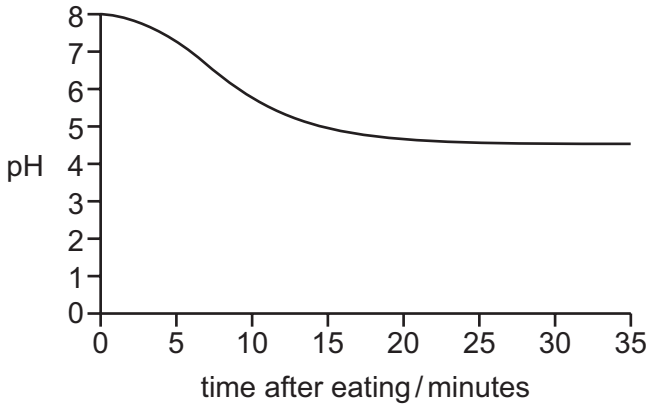
13 The diagram shows part of the alimentary canal and associated organs.



Which structures secrete enzymes that digest proteins?

A T and U **B** U and V **C** V and W **D** W and T

14 The graph shows pH changes in the mouth after eating.



Why is it a good idea to brush teeth after eating?

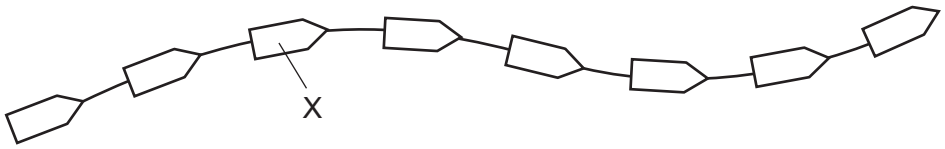
A Acidic conditions help bacteria to grow.

B Acids dissolve tooth enamel.

C Alkaline conditions help bacteria to grow.

D Alkalis dissolve tooth enamel.

15 The diagram shows part of a protein molecule.



What does X represent?

A amino acid

B fatty acid

C glycerol

D sugar

16 By which process is water lost from a leaf?

A active transport

B diffusion

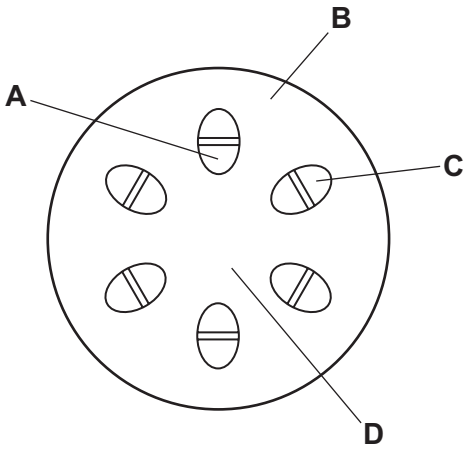
C osmosis

D photosynthesis

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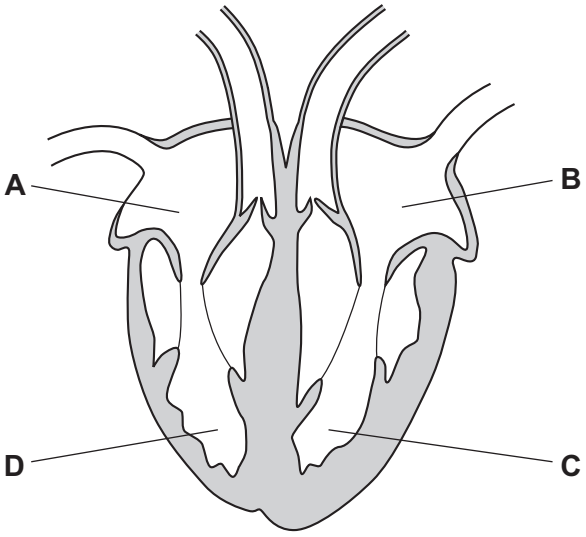
17 The lower end of a plant stem is placed in water coloured with red dye. After three hours, the stem is cut as shown in the diagram.

Which labelled region is stained red?

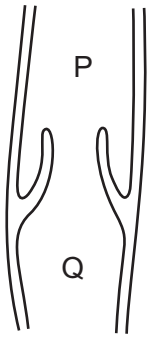


18 The diagram shows a section through the heart.

Which part pumps blood to the aorta?



19 The diagram shows a section through a blood vessel in the leg.



Which type of blood vessel is shown, and in which direction does the blood flow?

	type of vessel	direction of flow
A	artery	P to Q
B	artery	Q to P
C	vein	P to Q
D	vein	Q to P

20 The table shows the approximate composition of air breathed out by a mammal.

gas	air breathed out / %
nitrogen	80
oxygen	16
carbon dioxide	4

Where does the nitrogen in the air breathed out come from?

A It is a product of proteins broken down in the mammal.

B It is a product of respiration.

C It is exchanged for oxygen which is taken into the blood.

D It is in the air that was breathed in.

21 What is produced by yeast during anaerobic respiration?

A carbon dioxide and water

B ethanol and carbon dioxide

C ethanol and water

D lactic acid

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22 What helps oxygen to be absorbed rapidly into the blood in the lungs?

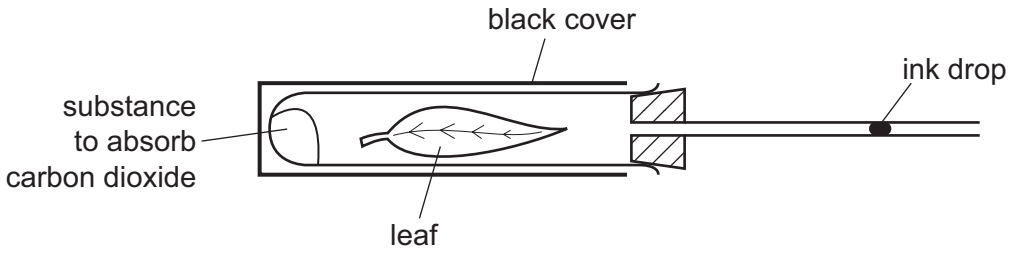
A Air breathed in has less oxygen than air breathed out.

B Alveoli have thick walls and a large surface area.

C Alveoli have thin walls and a large surface area.

D The concentration of oxygen in the blood is higher than in the alveoli.

23 The diagram shows an experiment to investigate gas exchange in a leaf.



In which direction does the ink drop move and for what reason?

	direction	reason
A	to the left	photosynthesis
B	to the left	respiration
C	to the right	photosynthesis
D	to the right	respiration

24 Where is urea formed?

A kidneys

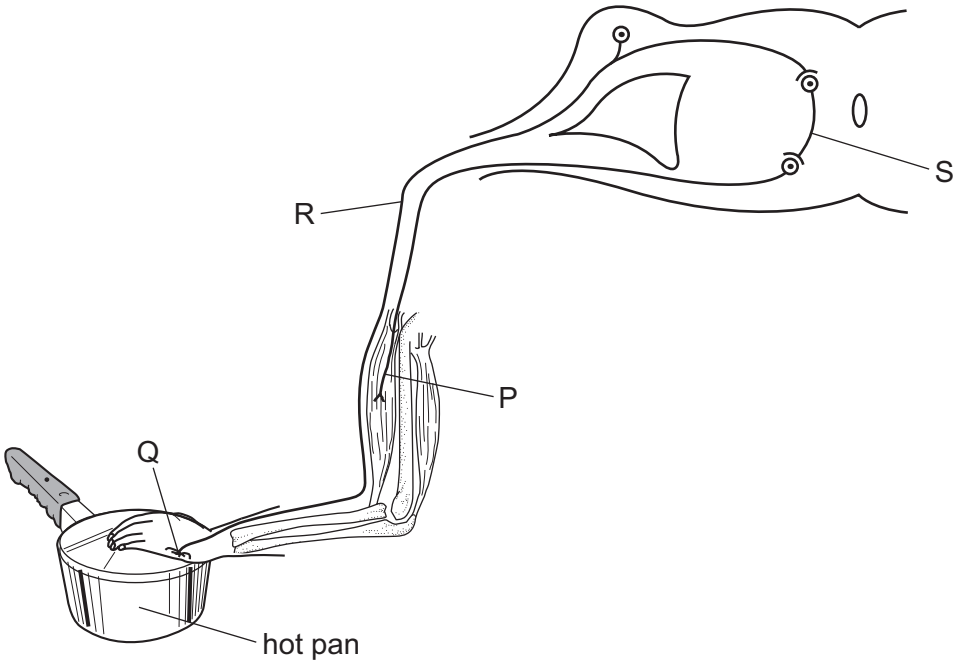
B liver

C muscles

D small intestine

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



What is the sequence in which impulses pass through these structures?

A P → S → R → Q

B Q → R → S → P

C Q → P → R → S

D S → P → Q → R

26 Which part of the human eye is sensitive to light?

A iris

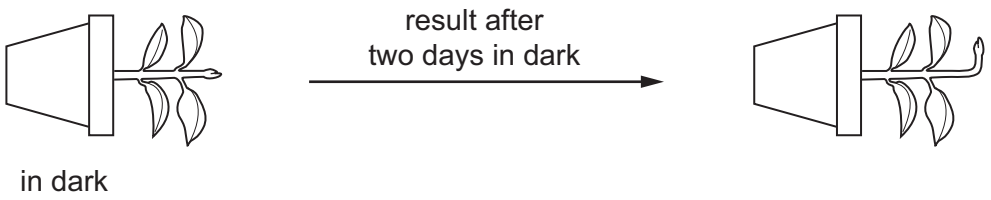
B lens

C optic nerve

D retina

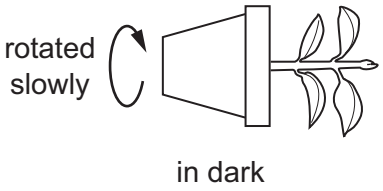
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27 The diagram shows an experiment to investigate the response of a plant stem to gravity.

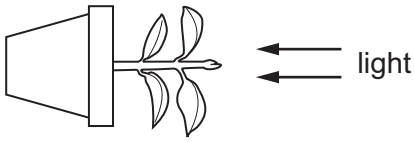


What is a suitable control for this experiment?

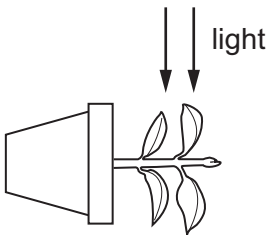
A



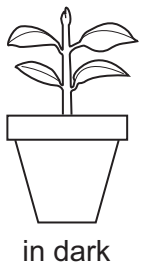
B



C



D



28 Possible effects of drug abuse include

1 addiction,

2 reduced self-control,

3 severe withdrawal symptoms.

Which effects may occur as a result of drinking too much alcohol?

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

29 What must always be available to allow seeds to germinate?

A carbon dioxide

B light

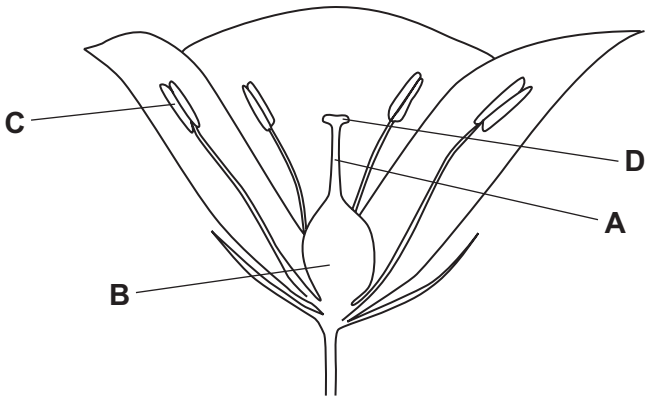
C mineral salts

D water

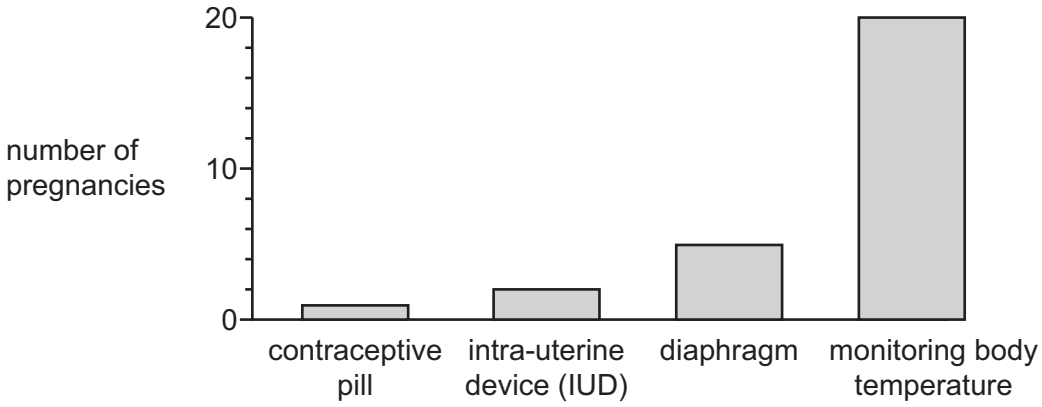
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30 The diagram shows a flower.

In which structure do seeds develop?



31 The graph shows the number of pregnancies in four groups of 100 women. Each group used a different method of contraception.



The method of contraception which is the **least** effective is

A barrier.

B chemical.

C natural.

D surgical.

32 The following statements are about some hormones in the human body.

V causes changes in the ovaries during the menstrual cycle

W promotes the development of stronger muscles

X causes the voice to deepen at puberty

Y produced by the pancreas

Which statements are correct for testosterone?

A V and W **B** V and Y **C** W and X **D** X and Y

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33 Which substance is coded for by a length of DNA?

A fat

B fatty acid

C glycerol

D lipase

34 What are alleles?

A a pair of chromosomes

B different versions of the same gene

C the total number of genes on one chromosome

D two genes side by side on the same chromosome

35 A pure-breeding plant with smooth stems was crossed with a heterozygous plant with hairy stems.

What will be the ratio of hairy : smooth stems in the resulting plants?

A 1 hairy : 1 smooth

B 1 hairy : 3 smooth

C 3 hairy : 1 smooth

D all hairy

36 Which processes are part of the carbon cycle?

	decomposition	evaporation	ingestion
A	✓	✓	✗
B	✓	✗	✓
C	✗	✓	✗
D	✗	✗	✓

37 The diagram shows organisms feeding on a dead rat and one of the organisms which, in turn, feeds on them.



What is needed to complete the food chain?

A carnivore

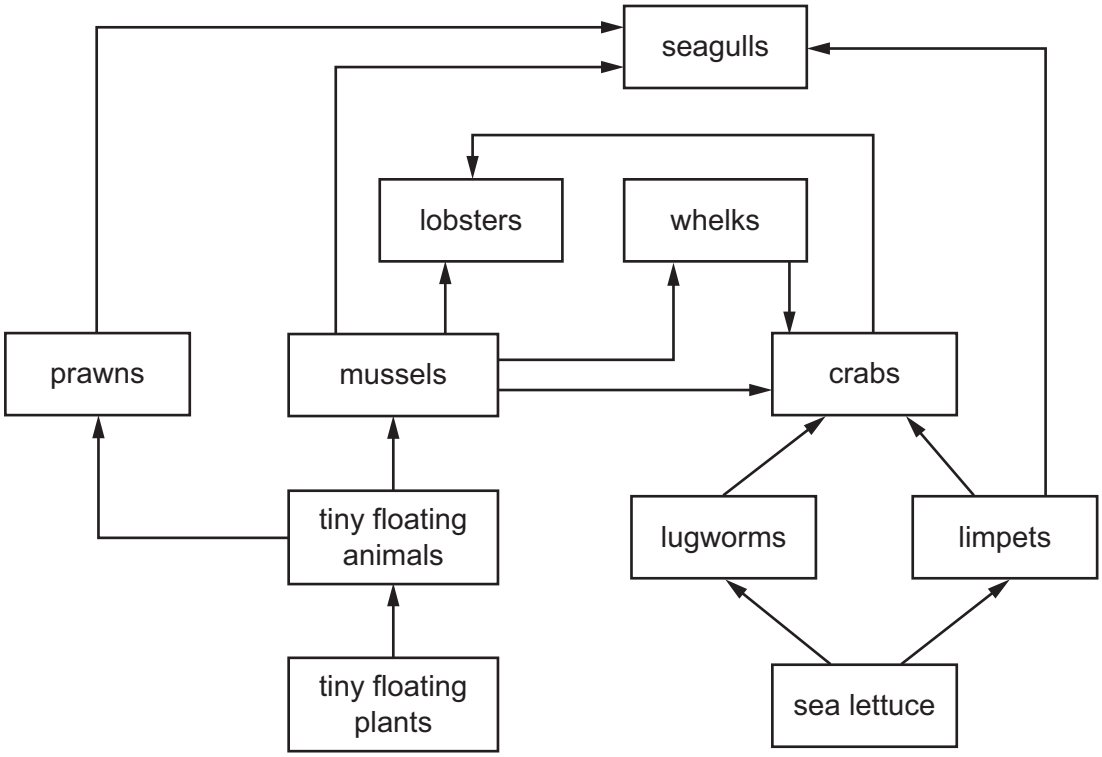
B consumer

C predator

D producer

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38 The diagram shows a food web.



Which organisms feed on the greatest variety of other organisms, as shown in **this** food web?

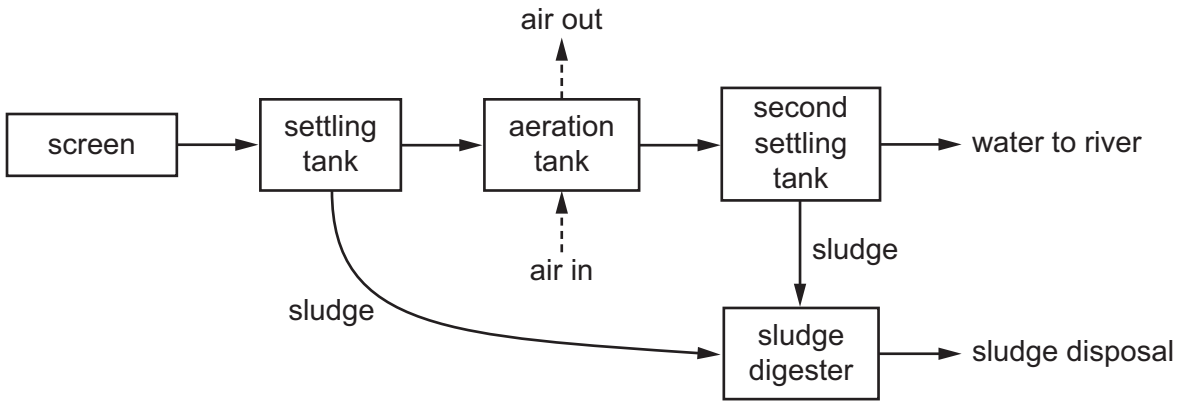
A crabs

B limpets

C lobsters

D mussels

39 The diagram shows how sewage is treated.



Why is air bubbled through the aeration tank?

A to encourage microorganisms to reproduce quickly

B to float the sludge

C to settle the sludge

D to stop microorganisms from reproducing too quickly

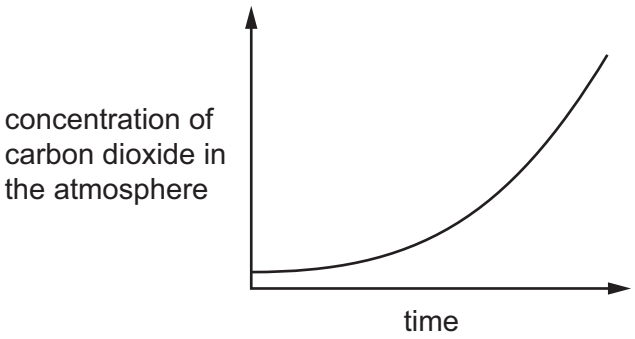
40 Three human activities are listed.

1 burning fossil fuels

2 deforestation

3 overusing fertilisers

Which activities can cause the change shown in the graph?



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

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