Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/23**

Paper 2 Multiple Choice (Extended) **October/November 2016**

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.

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

1 Breathing out combines which two characteristics of living organisms?

A excretion and movement

B excretion and respiration

C movement and sensitivity

D sensitivity and respiration

2 Scientists discover a new species of animal.

It has a segmented body with two pairs of legs on each segment.

To which group of animals does this new species belong?

A arachnids

B crustaceans

C insects

D myriapods

3 The diagram shows an insect.

Use the key to identify the insect.

1	wings present	go to 2
	wings absent	**A**
2	two pairs of wings	go to 3
	one pair of wings	**B**
3	wings with circular markings	**C**
	wings without circular markings	**D**

4 Which feature shows that a cell is a plant cell?

A cell membrane

B cell wall

C cytoplasm

D nucleus

5 The diagram shows an image of a chloroplast. The image is 5 cm long.

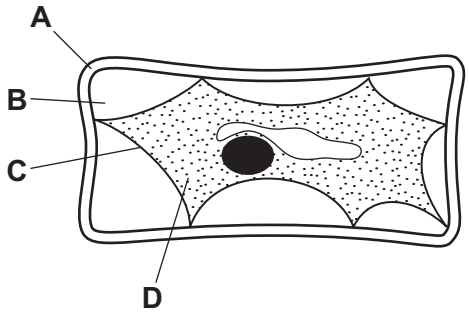
The actual length of the chloroplast is 5 μm.

What is the magnification of the image?

A ×10 **B** ×1000 **C** ×10 000 **D** ×100 000

6 The diagram shows a plant cell which has lost water to its surroundings by osmosis.

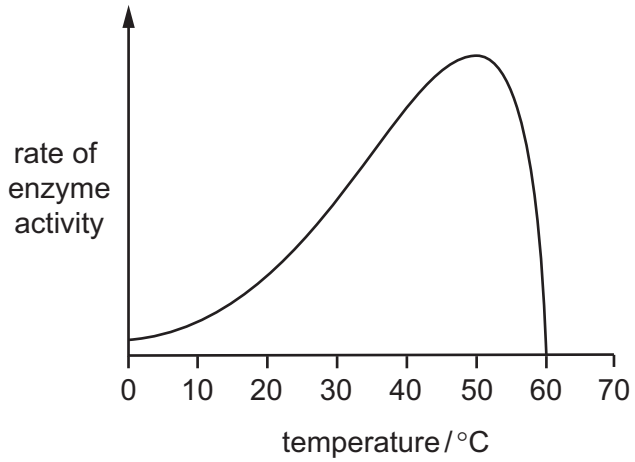
Which part is the partially permeable membrane?



7 What describes active transport?

	energy required	particles move against concentration gradient
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

8 The graph shows how the activity of an enzyme varies with temperature.



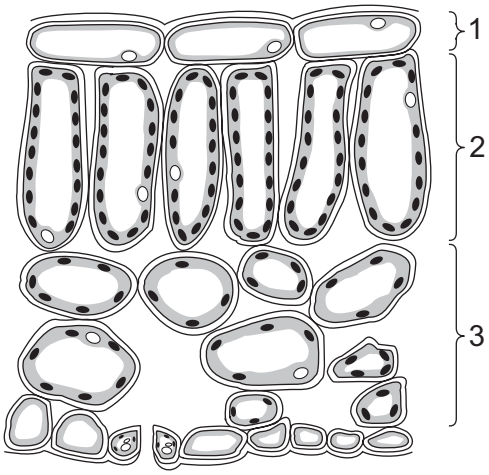
What is the best or optimum temperature for this enzyme and at what temperature is the enzyme not working?

	temperature / °C	
	best	not working
A	30	0
B	30	60
C	50	0
D	50	60

9 How does a plant use the sugar that it makes?

	stored as starch	used for photosynthesis	used for respiration	used to make cellulose
A	✓	✓	✓	✗
B	✓	✓	✗	✓
C	✓	✗	✓	✓
D	✗	✓	✓	✓

10 The diagram shows a leaf as seen in cross-section under the microscope.



What are tissues 1, 2 and 3?

	1	2	3
A	epidermis	palisade mesophyll	spongy mesophyll
B	epidermis	spongy mesophyll	palisade mesophyll
C	palisade mesophyll	epidermis	spongy mesophyll
D	spongy mesophyll	palisade mesophyll	epidermis

11 The roots of plants take up nitrates from the soil.

What are the nitrates used to make?

A fat

B glucose

C protein

D starch

[Turn over

12 Which disease do children suffer from if they do not get enough iron from their diet?

A anaemia

B kwashiorkor

C marasmus

D rickets

13 What is the correct order of the processes that take place in the alimentary canal?

A absorption, digestion, ingestion, egestion

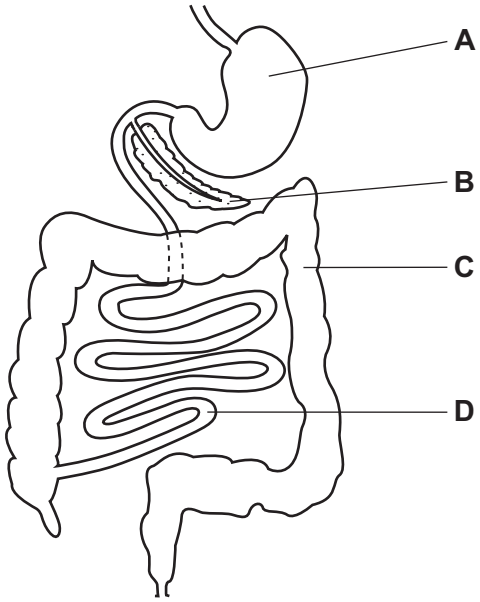
B digestion, ingestion, egestion, absorption

C egestion, digestion, absorption, ingestion

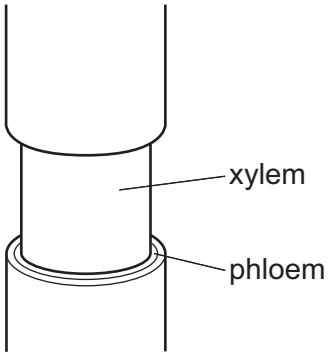
D ingestion, digestion, absorption, egestion

14 The diagram shows part of the human alimentary canal.

Which organ produces hydrochloric acid?



15 The diagram shows the stem of a plant. A strip of the outer tissue including the phloem has been removed.



How is transport in the plant affected?

A Amino acids and sugar cannot pass to the roots.

B Dissolved salts cannot pass to the leaves.

C Water cannot pass to the leaves.

D Water cannot pass to the roots.

16 Which changes in atmospheric conditions can cause a plant to wilt?

	humidity	temperature
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

17 Which substance is moved by translocation in a flowering plant?

A amino acid

B cellulose

C fat

D starch

18 What is a double circulation?

A Blood circulates through arteries and veins.

B Blood circulates through two hearts.

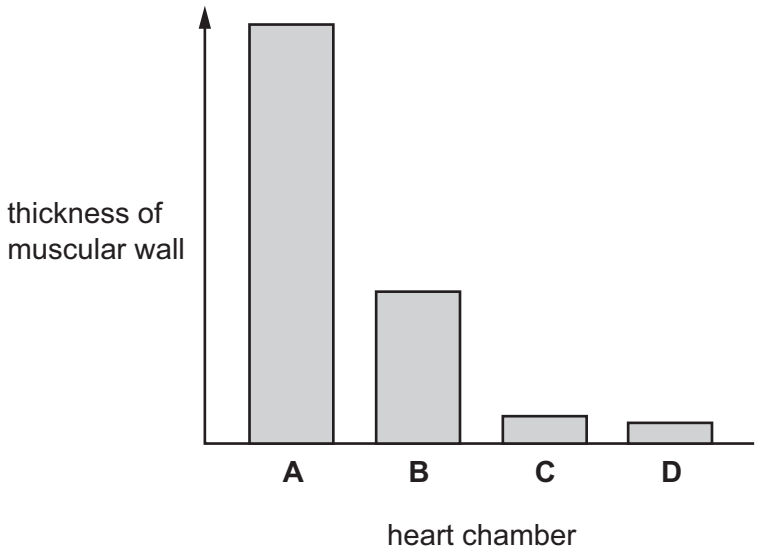
C Blood flows through the heart twice for each circulation.

D Blood flows twice around the body before going to the lungs.

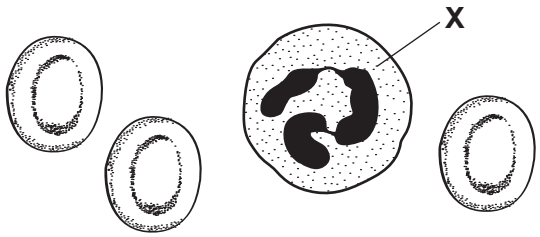
[Turn over

19 The graph shows the thickness of the muscular wall in each of the four chambers of the heart.

Which chamber is the right ventricle?



20 The diagram shows human blood cells, as seen under a microscope.



What is the function of cell **X**?

A to carry glucose

B to carry oxygen

C to defend against disease

D to make the blood clot

21 What are disease-causing organisms?

A antibodies

B pathogens

C phagocytes

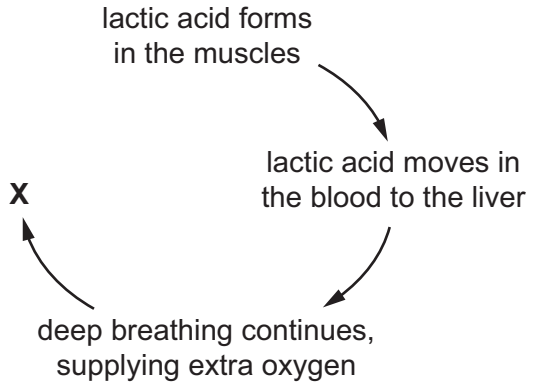
D vaccines

22 Which row describes active immunity?

	depends on phagocytes	memory cells are produced
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

23 After a race, athletes experience oxygen debt.

The diagram shows how the oxygen debt is removed.



What happens at **X**?

A aerobic respiration of glucose

B aerobic respiration of lactic acid

C anaerobic respiration of glucose

D anaerobic respiration of lactic acid

24 What is the equation for aerobic respiration in plants?

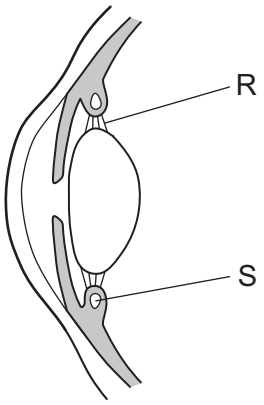
A $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

B $C_6H_{12}O_6 \rightarrow 2C_3H_6O_3$

C $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

D $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$

25 The diagram shows a vertical section through the front part of an eye when viewing a near object.



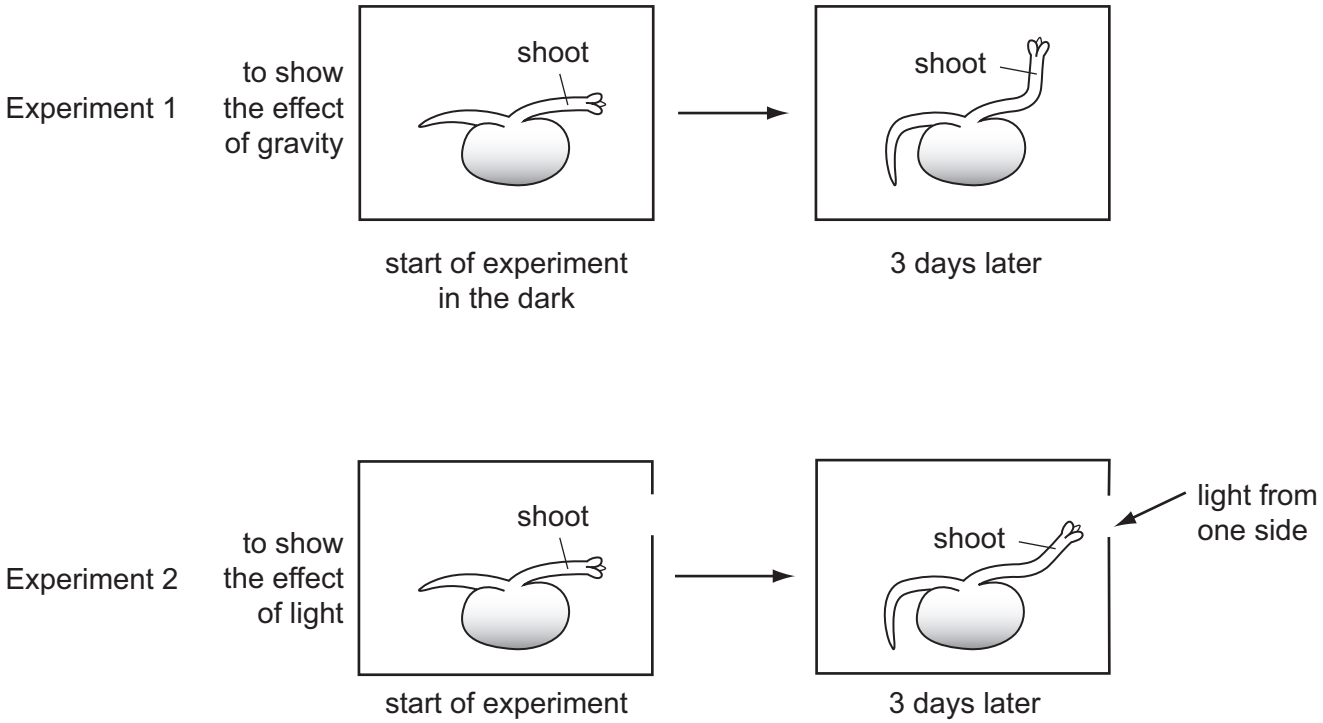
What describes structures R and S?

	R under tension	S contracted
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

26 When the blood glucose concentration is low, which hormone is released and which organ releases it?

	hormone	organ
A	glucagon	liver
B	glucagon	pancreas
C	insulin	liver
D	insulin	pancreas

27 The diagram shows seedlings in two experiments on the tropic response of seedlings to gravity and light.



How have the seedlings responded?

	to gravity	to light
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = tropic response shown

✗ = no tropic response shown

28 When does fertilisation occur in humans?

A when an egg is released

B when implantation occurs

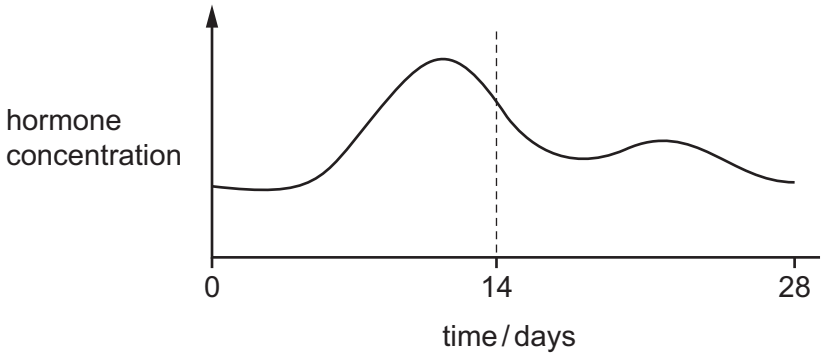
C when sperm and egg nuclei fuse

D when sperm are released

29 The diagram shows the structure of a sperm cell.

Which part is the flagellum?

30 The graph shows a hormone that is involved in controlling the menstrual cycle.



What is the hormone?

A FSH

B LH

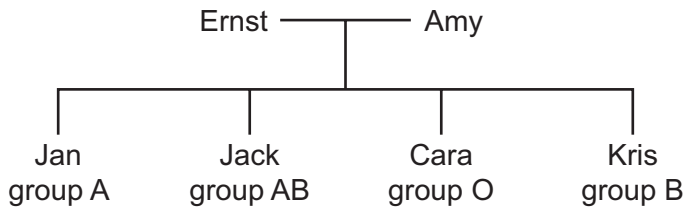
C oestrogen

D progesterone

31 What happens in mitosis?

	genetically identical cells produced	chromosome number is halved
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

32 Ernst and Amy have four children of different blood groups, as shown.



What are the genotypes of Ernst and Amy?

A I^AI^A and I^BI^o

B I^AI^B and I^oI^o

C I^AI^o and I^BI^B

D I^AI^o and I^BI^o

33 What is an adaptive feature of xerophytes?

A do not have root hair cells

B leaves have large surface area

C stomata are in pits

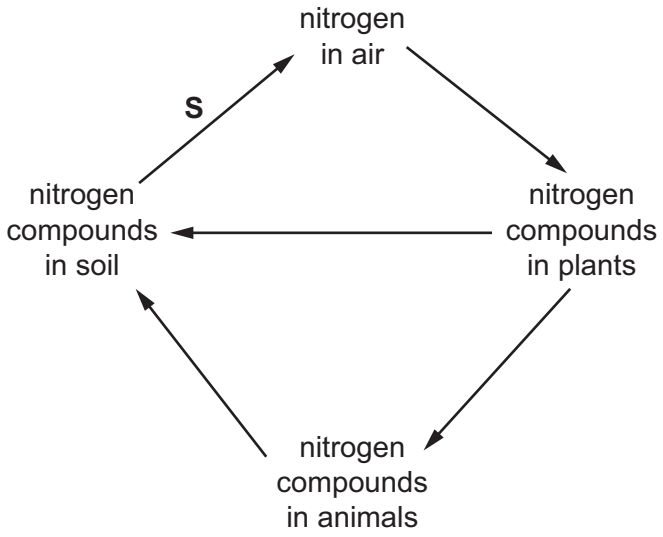
D thin cuticles

34 What are possible positions in a food chain of a carnivore and a herbivore?

	carnivore	herbivore
A	primary consumer	producer
B	secondary consumer	primary consumer
C	secondary consumer	tertiary consumer
D	tertiary consumer	secondary consumer

[Turn over

35 The diagram shows part of the nitrogen cycle.



What is process **S**?

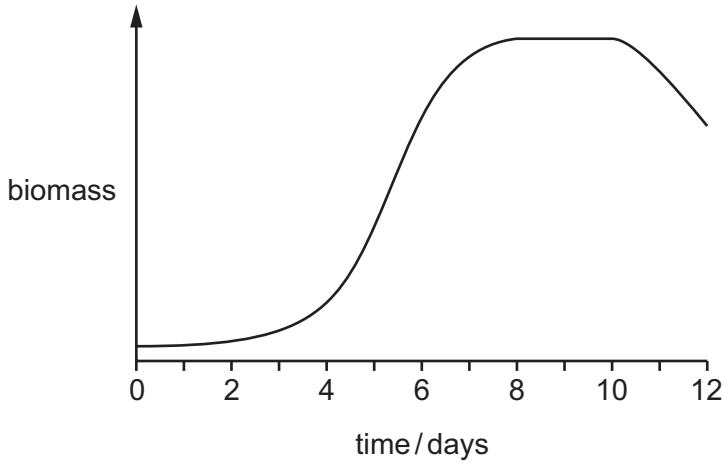
A denitrification

B nitrification

C nitrogen fixation

D nutrition

36 The graph shows the growth of a yeast population.



When was the rate at which cells were dying equal to the rate at which new cells were being formed?

A day 3 **B** day 5 **C** day 9 **D** day 11

37 Which structures, found in bacteria, make them useful in genetic engineering?

A cell walls

B membranes

C plasmids

D mitochondria

38 Why is yeast used in bread-making?

A Aerobic respiration produces alcohol.

B Aerobic respiration produces lactic acid.

C Anaerobic respiration produces alcohol.

D Anaerobic respiration produces carbon dioxide.

39 An advantage of some genetically modified crop plants is that they will **not**

A be affected by herbicides.

B need carbon dioxide.

C need magnesium ions.

D need water.

40 Fertiliser leaks into a river resulting in eutrophication.

What is the correct order of events leading to the death of animals in the river?

A increased aerobic respiration by decomposers → reduction in dissolved oxygen → increased growth of plants → increased decomposition of dead plants

B increased decomposition of dead plants → increased growth of plants → reduction in dissolved oxygen → increased aerobic respiration by decomposers

C increased growth of plants → increased decomposition of dead plants → increased aerobic respiration by decomposers → reduction in dissolved oxygen

D reduction in dissolved oxygen → increased growth of plants → increased aerobic respiration by decomposers → increased decomposition of dead plants

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