GradeMax

CAMBRIDGE
International Education

Cambridge IGCSE™

BIOLOGY **0610/22**

Paper 2 Multiple Choice (Extended) **May/June 2026**

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)

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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 or tape.
- 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.

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[Turn over

1 A man moves from a sitting position and walks towards a closed door. He opens the door and takes a short walk.

Which characteristics of living organisms are demonstrated by the man?

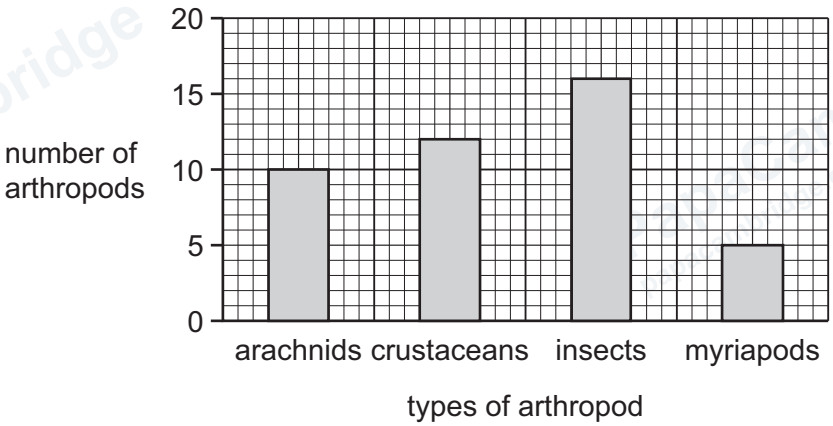
A excretion, respiration and sensitivity

B growth, excretion and respiration

C growth, nutrition and reproduction

D nutrition, respiration and sensitivity

2 The bar chart shows the number of arthropods and the types of arthropod in 1 m^2 area of a field.



How many of these arthropods have more than three pairs of jointed legs?

A 27 **B** 31 **C** 33 **D** 38

3 In which part of the cell does aerobic respiration occur?

A cytoplasm

B mitochondrion

C ribosome

D vesicle

4 A leaf is viewed under a microscope. The thickness of the leaf is measured as 6 mm.

The magnification used was ×40.

What is the actual thickness of the leaf in µm?

A 0.007 µm **B** 0.15 µm **C** 6.7 µm **D** 150 µm

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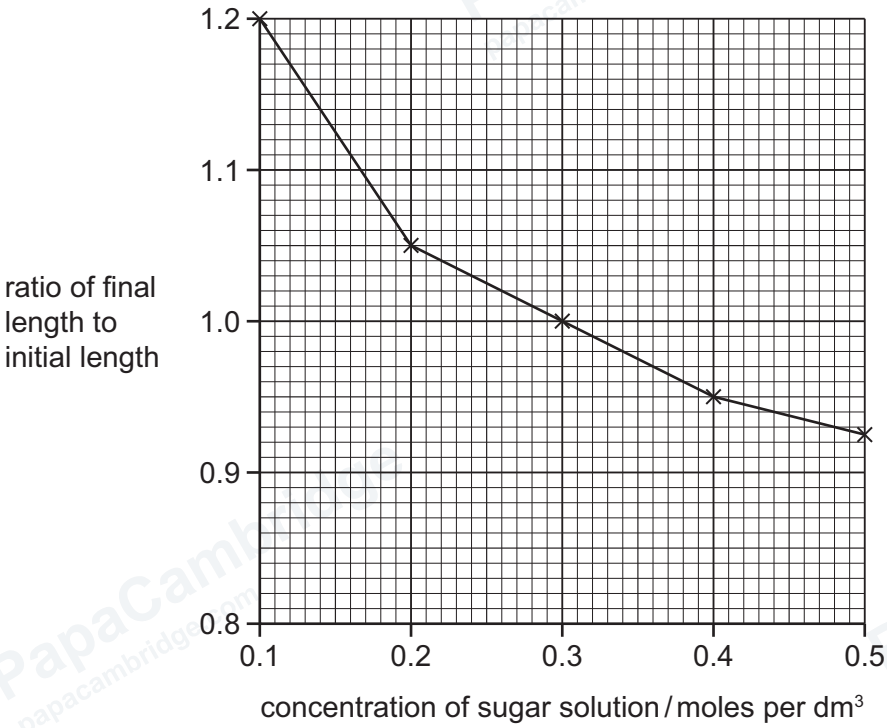
5 Potato cylinders were placed in sugar solutions of different concentrations.

The lengths of the cylinders were measured before and after they were placed in the sugar solutions.

The ratio of final length to initial length was calculated. The initial length of the potato cylinders was 4 cm.

The graph shows the results of the investigation.



What was the final length of the potato cylinder that was placed in 0.1 moles per dm^3 sugar solution?

A 5.2 cm **B** 4.8 cm **C** 3.3 cm **D** 1.2 cm

6 A DNA molecule consists of two strands.

Which row shows two bases that form bonds that hold the strands together?

	base 1	**base 2**
A	A	C
B	G	A
C	G	T
D	T	A

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7 Which statement about enzyme action is correct?

A Above the optimum temperature, the kinetic energy of the enzyme and substrate decreases.

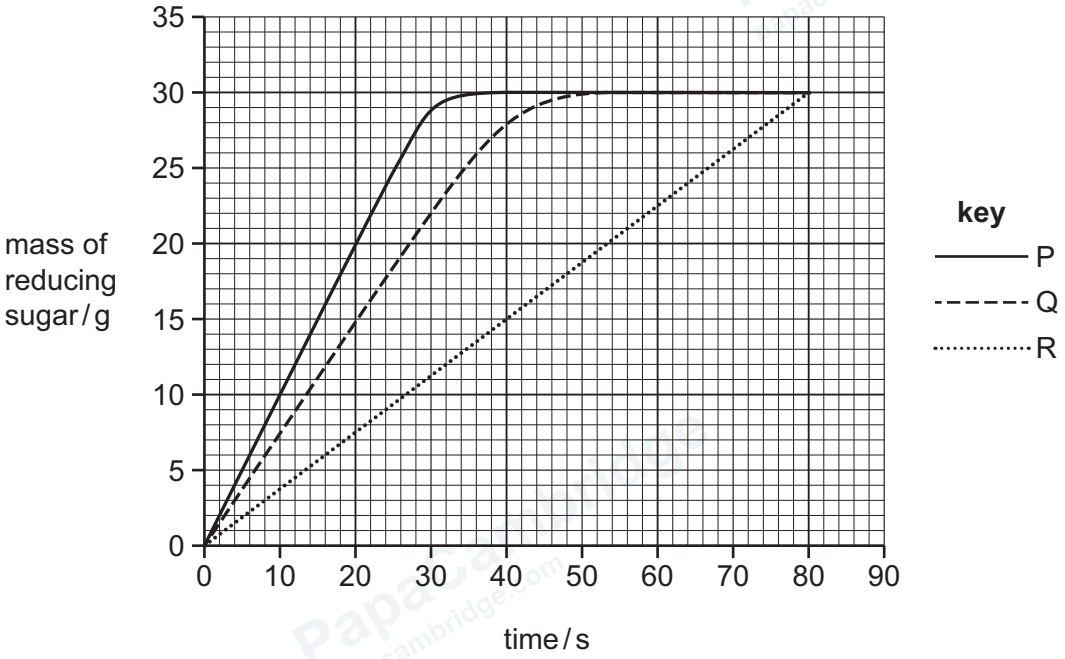
B The enzyme maltase has a complementary shape to starch.

C The enzyme pepsin denatures in all acidic pH values.

D The frequency of effective collisions between the enzyme and substrate is greatest at the optimum temperature.

8 When amylase is added to a starch suspension, reducing sugars are produced.

The graph shows the mass of reducing sugar produced over time when using three different types of amylase, P, Q and R. All other conditions are kept the same.



When the reaction was repeated using a different type of amylase, S, the rate of reaction was found to be 0.75 g / s.

What is the correct order of rate of reaction for the different types of amylase from fastest to slowest?

A S → P → Q → R

B P → S → Q → R

C P → Q → S → R

D P → Q → R → S

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9 Which statement describes the pathway taken by a substance required for photosynthesis?

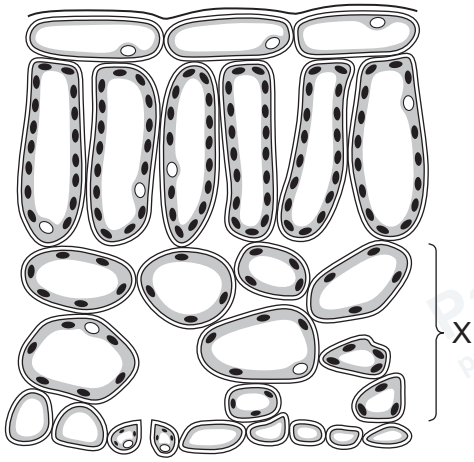
A Carbon dioxide moves through the cuticle into air spaces in the palisade mesophyll and then into chloroplasts.

B Carbon dioxide moves through the stomata into air spaces in the spongy mesophyll and then into chloroplasts.

C Water moves through the phloem into the epidermis then into chloroplasts.

D Water moves through the xylem into the epidermis then into chloroplasts.

10 The diagram shows part of a leaf.



What is layer X?

A lower epidermis

B palisade mesophyll

C spongy mesophyll

D vascular bundle

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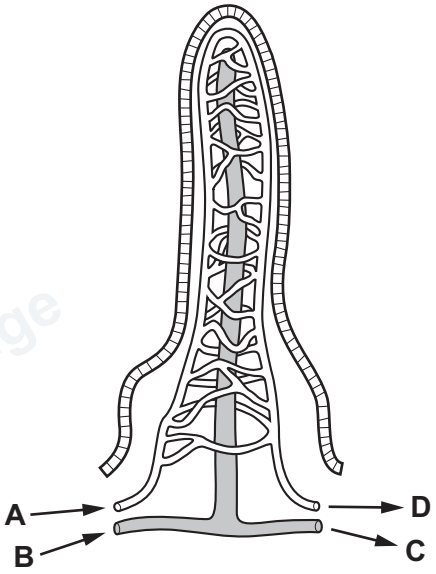
11 The diagram shows a villus.

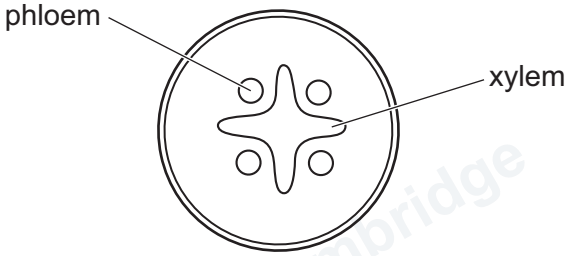
The arrows show the direction of flow within vessels entering and leaving the villus.

At which arrow is the concentration of fatty acids the highest?

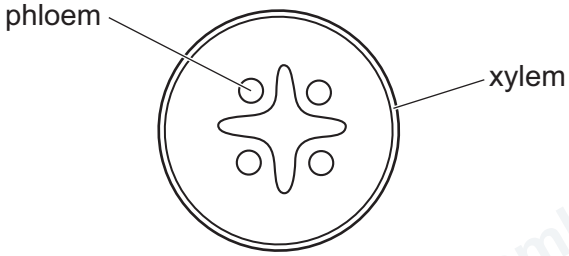


12 Which diagram correctly identifies the location of the xylem and the phloem in a root?

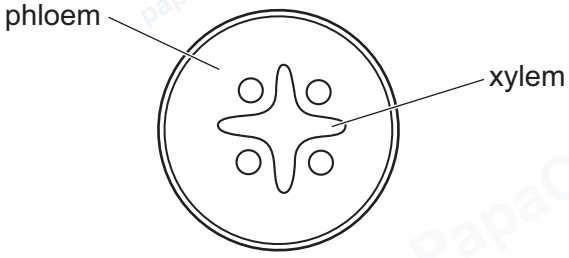
A



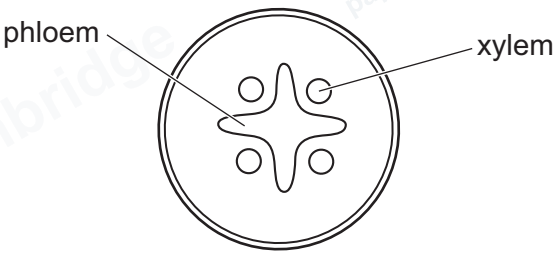
B



C



D



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13 Which statement explains why transpiration occurs?

A Carbon dioxide enters the leaf only when stomata are open, so water vapour diffuses out.

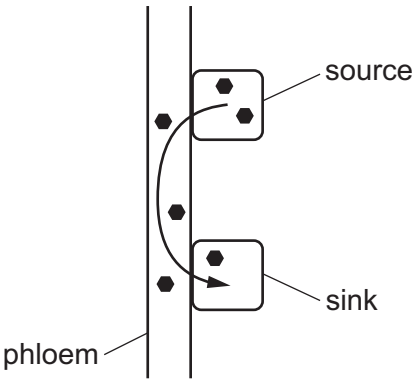
B Roots constantly absorb water by active transport and this is eliminated by transpiration.

C Transpiration occurs so the xylem can transport amino acids to the growing leaves.

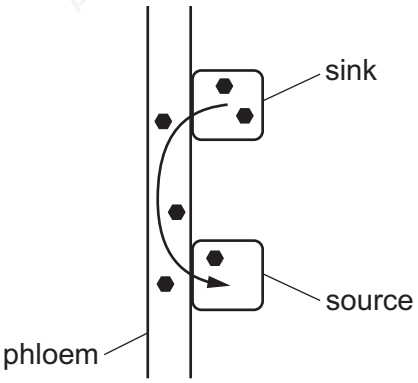
D Water produced during photosynthesis is excreted from leaves during transpiration.

14 Which diagram of translocation is correctly labelled?

A



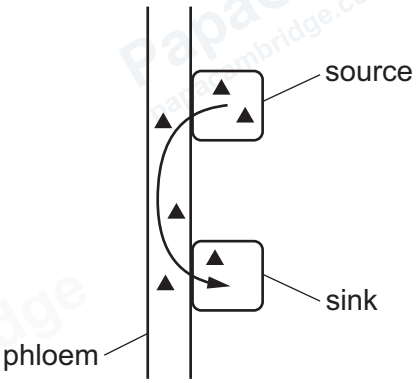
B



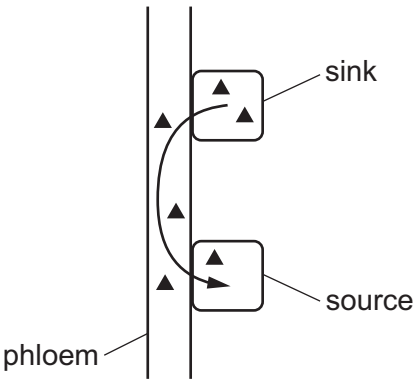
key

- glucose
- sucrose

C



D



15 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.

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16 Which row shows what is carried, and in which direction, by the pulmonary vein?

	what is carried	direction
A	deoxygenated blood	from the heart
B	deoxygenated blood	to the heart
C	oxygenated blood	from the heart
D	oxygenated blood	to the heart

17 What describes passive immunity?

A the defence against a pathogen by antibodies acquired from another individual

B the engulfing and digestion of pathogens by phagocytes

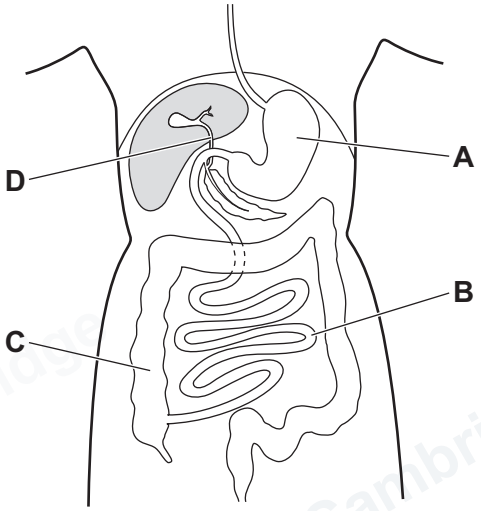
C the immunity that is gained after infection by a pathogen

D the protection against a pathogen by antibody production in the body

18 The cholera bacterium produces a toxin that results in water entering the alimentary canal and causing diarrhoea.

The diagram shows the human alimentary canal.

Into which region are chloride ions secreted as a result of the toxin?



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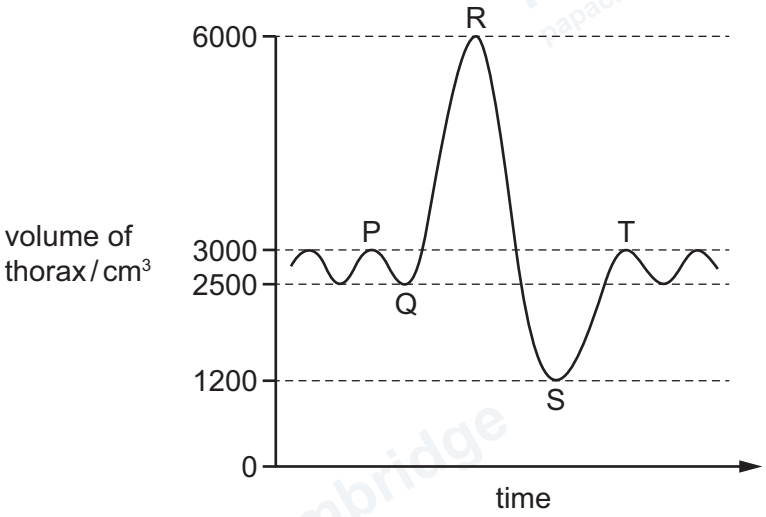
19 The graph shows the changes in volume of the thorax when a human is inspiring and expiring.



Which row shows the regions on the graph when the internal and external intercostal muscles are contracting?

	internal intercostal muscles contract	external intercostal muscles contract
A	P to Q	R to S
B	Q to R	S to T
C	R to S	Q to R
D	S to T	P to Q

20 Which statement is correct for both aerobic and anaerobic respiration?

A Both break down $C_6H_{12}O_6$.

B Both produce an oxygen debt.

C Both use CO_2.

D Both use O_2.

21 What is the function of a glomerulus?

A deamination

B filtering the blood

C forming urea

D reabsorbing glucose

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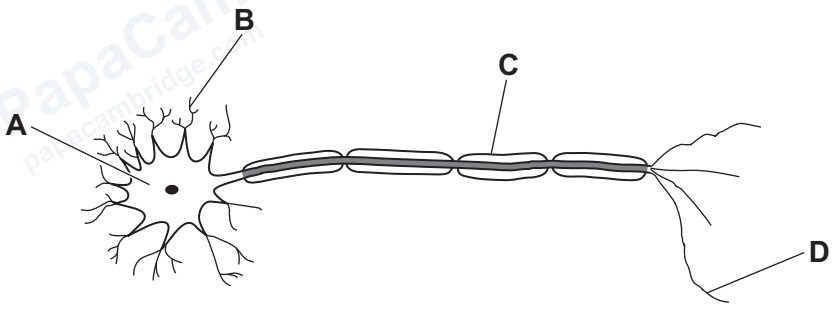
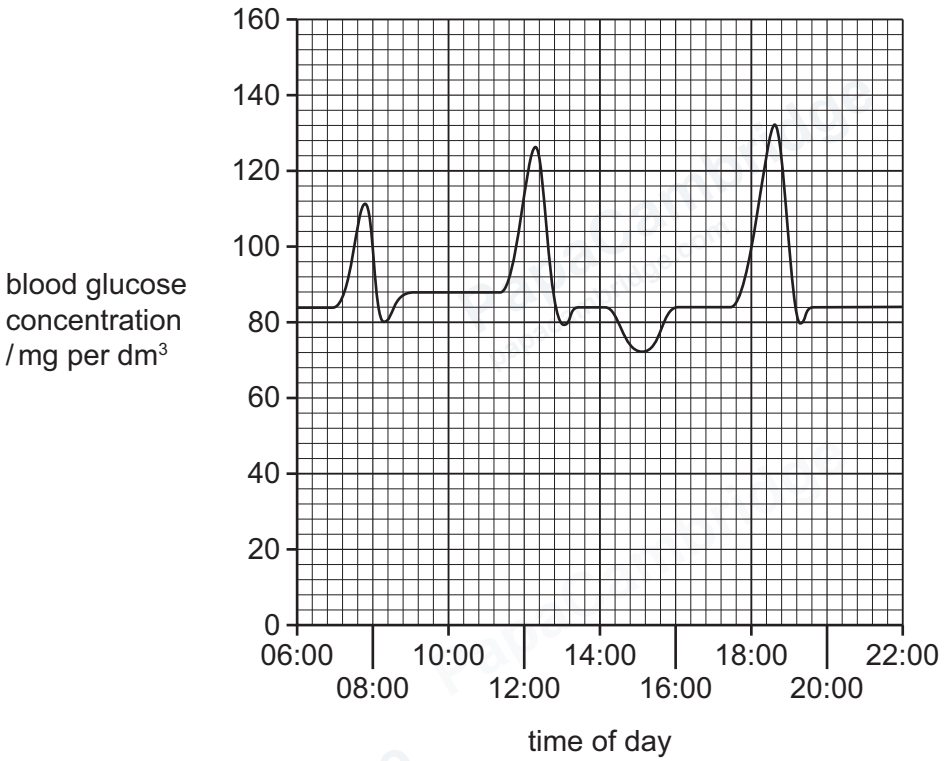
22 The diagram shows a motor neurone.

Where do neurotransmitter molecules bind with receptor proteins?



23 The graph shows the blood glucose concentration of a student during one day.



At which time of day would the concentration of glucagon in the blood be at its highest?

A 07:00–08:00 **B** 11:30–13:00 **C** 14:00–15:30 **D** 17:30–18:30

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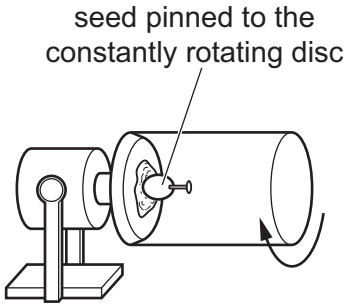
24 A seed is placed and grown on a rotating disc as shown.



Which diagram shows the appearance of the seedling shoot after seven days?

A



B



C



D



25 Antibiotics can be used to treat some infections.

Which infections can be treated by antibiotics?

A all pathogens

B bacteria and viruses only

C bacteria only

D viruses only

26 What is the correct description of the transfer of pollen grains during pollination?

A transfer from a filament to an anther

B transfer from a stigma to an ovary

C transfer from an anther to a stigma

D transfer from an ovary to a filament

27 Which statement is correct for reproduction in humans?

A A zygote embeds in the lining of the uterus.

B The female gamete has a large store of energy.

C Fertilisation is the fusion of two gametes.

D The male deposits sperm in the uterus of the female.

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28 Which row shows the correct direction and site for the net exchange of gases between the mother's blood and the fetus's blood?

	carbon dioxide	oxygen	site of exchange
A	from fetus to mother	from mother to fetus	placenta
B	from fetus to mother	from mother to fetus	umbilical cord
C	from mother to fetus	from fetus to mother	placenta
D	from mother to fetus	from fetus to mother	umbilical cord

29 Which row describes the control of the production of proteins in a cell?

	what forms the genetic code	what DNA codes for
A	sequence of amino acids	sequence of bases
B	sequence of amino acids	sequence of proteins
C	sequence of bases	sequence of amino acids
D	sequence of bases	sequence of proteins

30 The diagram shows the chromosomes present in a diploid cell.



How many chromosomes will be present in the nucleus of a haploid cell produced by this organism?

A 16 **B** 8 **C** 4 **D** 2

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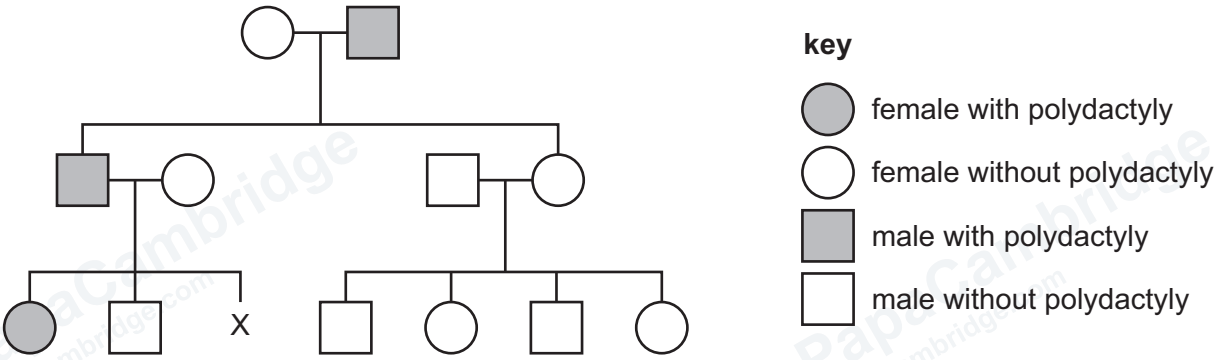
31 Polydactyly is a genetic condition caused by a dominant allele. Cats with the condition have extra toes.

The pedigree chart shows the inheritance of polydactyly in one family of cats.



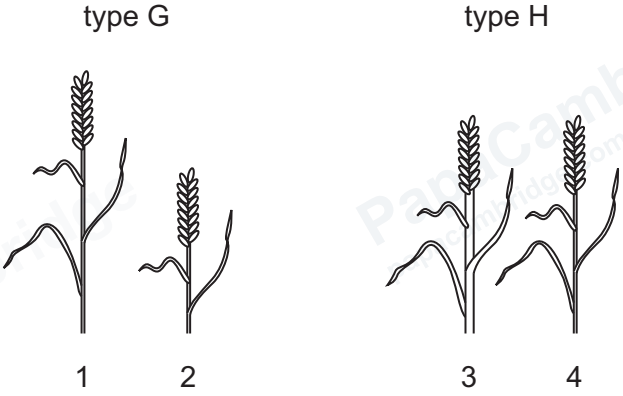
What is the probability of the cat indicated by X having polydactyly?

A 0 **B** 0.25 **C** 0.50 **D** 1

32 A farmer wants to produce wheat which is short and has strong stems.

Type G varies in height, but always has thin stems.

Type H varies in stem thickness, but always has a similar height.



Which two parent plants should the farmer choose to breed?

	type G	type H
A	1	3
B	1	4
C	2	3
D	2	4

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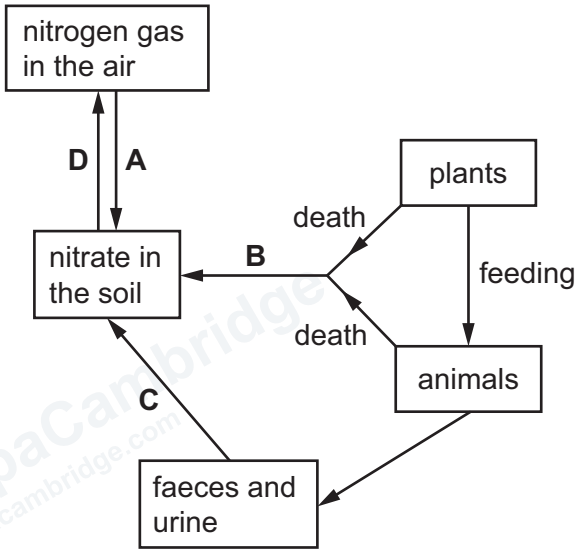
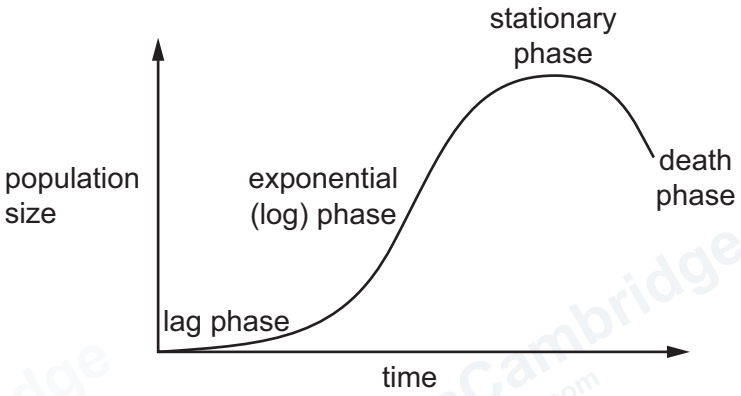
33 The diagram shows part of the nitrogen cycle.

Which change is caused by the action of denitrifying bacteria?



34 The graph shows a growth curve for a population.



Which two phases of the growth curve are affected by factors such as predation, disease or lack of food?

A exponential (log) and death

B exponential (log) and stationary

C lag and exponential (log)

D stationary and death

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35 Why are herbicides used in crop production?

A to increase crop yields by reducing competition between weeds and crop plants

B to increase crop yields by increasing competition between weeds and crop plants

C to decrease crop yields by reducing competition between weeds and crop plants

D to decrease crop yields by increasing competition between weeds and crop plants

36 What describes biodiversity?

A a group of organisms of one species, living in the same area, at the same time

B a unit containing the community of organisms and their environment interacting together

C all the populations of different species in an ecosystem

D the number of different species that live in an area

37 Three descriptions of the processes that occur during eutrophication are listed.

1 decreased aerobic respiration by fish

2 increased decomposition of aquatic plant protein to ammonium ions

3 increased conversion of nitrate ions to amino acids in aquatic plants

What is the correct order of these processes during eutrophication?

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

38 One method of assisted reproduction involves the insertion of sperm into the female reproductive system.

What is this type of assisted reproduction, and what is the site of insertion of sperm?

	type of assisted reproduction	**site of insertion**
A	artificial insemination	egg
B	artificial insemination	uterus
C	*in vitro* fertilisation (IVF)	egg
D	*in vitro* fertilisation (IVF)	uterus

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39 Which enzyme would be used in a biological washing powder?

A DNA ligase

B maltase

C pectinase

D protease

40 Genetic modification can involve the insertion of genes into an organism.

In which example are human genes inserted into other organisms?

A into bacteria to produce proteins

B into plants to give resistance to herbicides

C into plants to give resistance to insect pests

D into plants to improve nutritional qualities

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