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Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/13**

Paper 1 Multiple Choice (Core) **October/November 2024**

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)

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.
- 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.

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1 Students find a small organism in a pond. They catch it and put it into a large jar of water. They see that the organism swims away from light. It lays some eggs before it is put back into the pond.

Which characteristics of living things did the students **see** in this organism?

A excretion, growth and respiration

B growth, nutrition and sensitivity

C movement, reproduction and sensitivity

D movement, reproduction and respiration

2 Which description of a species is correct?

A a group of organisms living at the same time

B a group of organisms living in the same area

C a group of organisms that can reproduce to produce fertile offspring

D a group of organisms that have adaptive features

3 The table shows the number of animals collected in a sample from a woodland and the groups to which they belong.

animal group	number in sample
arachnids	10
crustaceans	8
insects	80
myriapods	7

How many of the animals, in total, are arthropods with six or eight legs?

A 15 **B** 88 **C** 90 **D** 98

4 Some vertebrates have body hair.

Which group do these vertebrates belong to?

A amphibian

B bird

C mammal

D reptile

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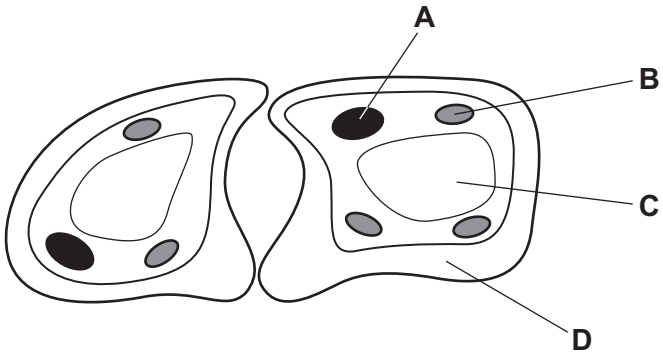
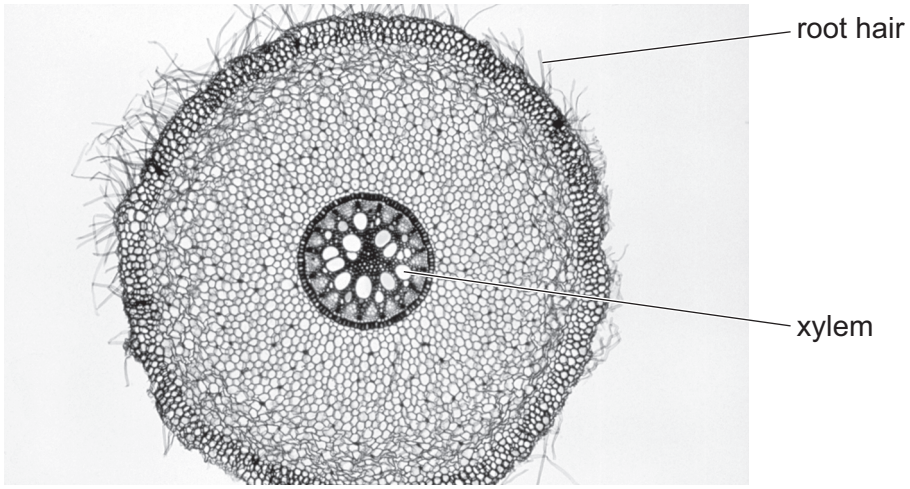
5 The diagram shows two guard cells from a leaf.

Which labelled part would also be found in sperm cells?



6 The photograph shows part of a cross-section of a root.



The root hair and the xylem are part of the same

A cell and organism.

B cell and tissue.

C organ and organism.

D tissue and organ.

7 Which formula is correct for calculations involving image size, actual size and magnification?

A actual size = image size × magnification

B image size = magnification × actual size

C magnification = actual size ÷ image size

D magnification = image size × actual size

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8 Which statements about diffusion are correct?

1 Diffusion is the net movement of particles from a higher to a lower concentration.

2 Diffusion is the net movement of particles only across cell membranes.

3 Diffusion requires energy from respiration.

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

9 What is the name of the process in which water moves through a partially permeable membrane?

A active transport

B evaporation

C osmosis

D transpiration

10 A sample of food is tested with different chemical substances.

The table shows the results.

chemical used to test the food sample	final colour of the sample
iodine solution	yellow-brown
biuret	purple
DCPIP	colourless

Which nutrients does the sample of food contain?

A protein and vitamin C

B protein only

C starch and reducing sugar

D starch and vitamin C

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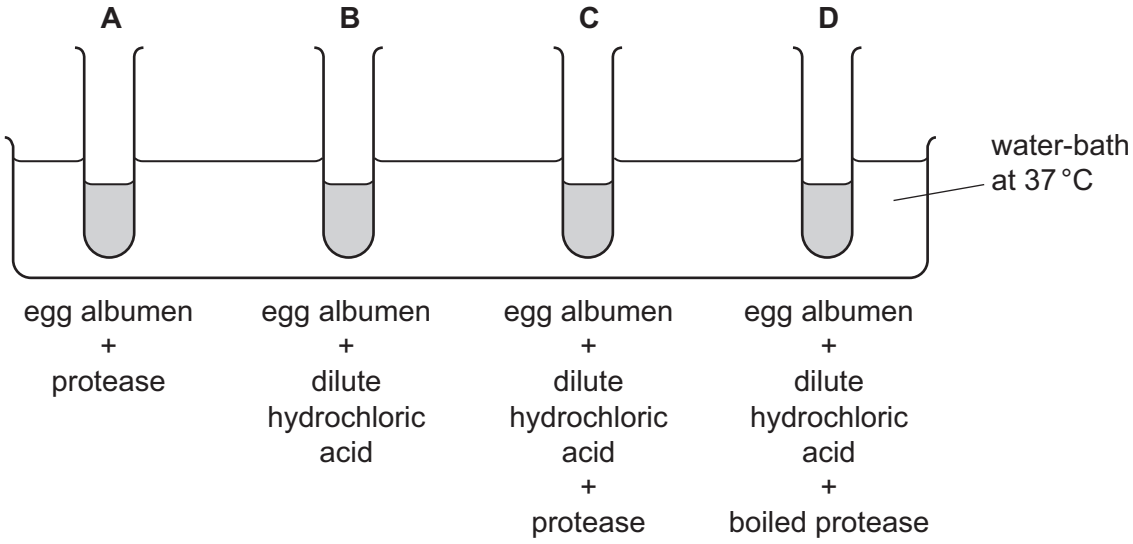
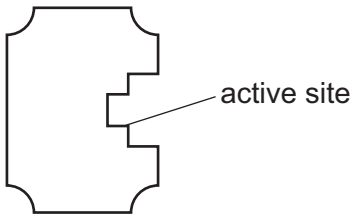
11 The diagram shows an experiment on the digestion of the protein in egg albumen by protease.

The protease was taken from a human stomach.

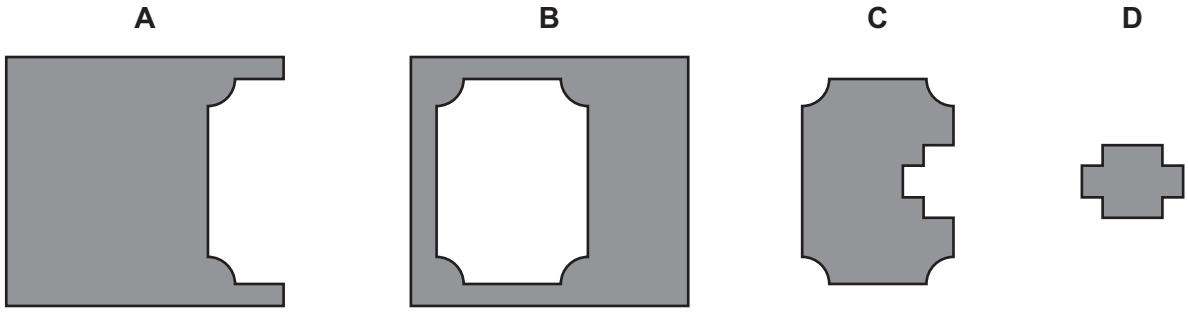
In which test-tube will protein be digested most quickly?



12 The diagram represents the shape of an enzyme molecule.



With which substrate would this enzyme most easily form an enzyme–substrate complex?



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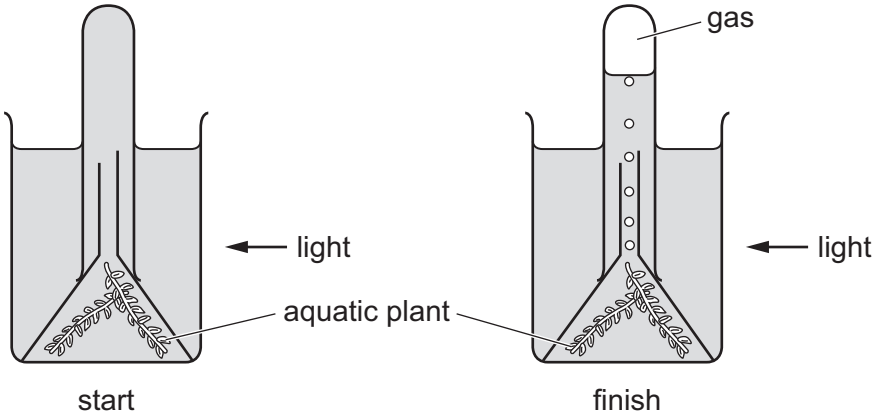
13 The diagram shows an experiment to investigate photosynthesis.



What is the most abundant gas present at the top of the tube at the end of the experiment?

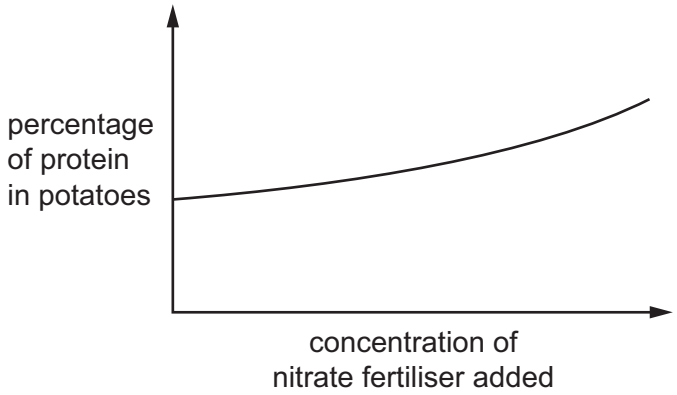
A carbon dioxide

B methane

C water vapour

D oxygen

14 The graph shows how the percentage of protein found in potatoes was affected by the concentration of nitrate fertiliser added to the crop when it was growing.



Using the information in the graph, which molecule do the potatoes make more of when the concentration of nitrate fertiliser increases?

A amino acids

B cellulose

C fat

D starch

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15 Which food would add more fibre as part of a balanced diet?

A black beans

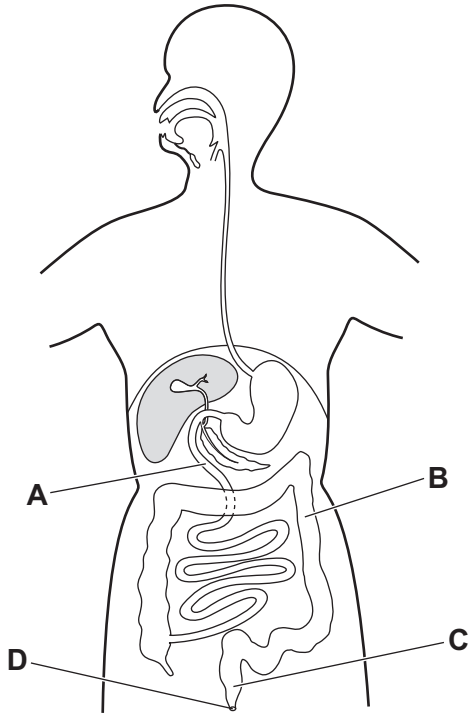
B cheese

C eggs

D tuna fish

16 The diagram shows the human digestive system.

Which letter represents the rectum?



17 The bacterium *Salmonella enterica* can cause severe food poisoning, and the lining of the alimentary canal may be damaged. This damage affects the absorption of digested food.

Which region of the alimentary canal is most affected by this type of food poisoning?

A colon

B ileum

C oesophagus

D stomach

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18 In which part of the alimentary canal is the **most** water absorbed?

A colon

B rectum

C small intestine

D stomach

19 The diagram shows the pathway of water molecules through a leaf and out to the environment.

mesophyll cell → process X → air space → process Y → stomata

Which statements are correct?

1 Process X is active transport.

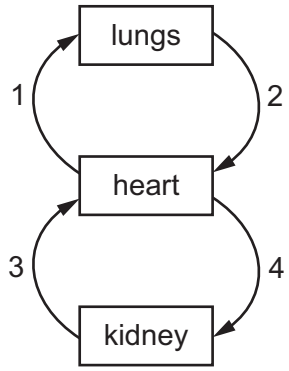
2 Process X is evaporation.

3 Process Y is diffusion.

4 Process Y is osmosis.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

20 The diagram shows blood vessels entering and leaving some organs in the human body.



Which row identifies the pulmonary artery and the renal vein?

	pulmonary artery	renal vein
A	1	3
B	1	4
C	2	3
D	2	4

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21 When a pathogen enters the blood, the number of white blood cells increases.

Some possible reasons why this happens are listed.

1 It increases the number of antibodies.

2 It increases the transport of oxygen.

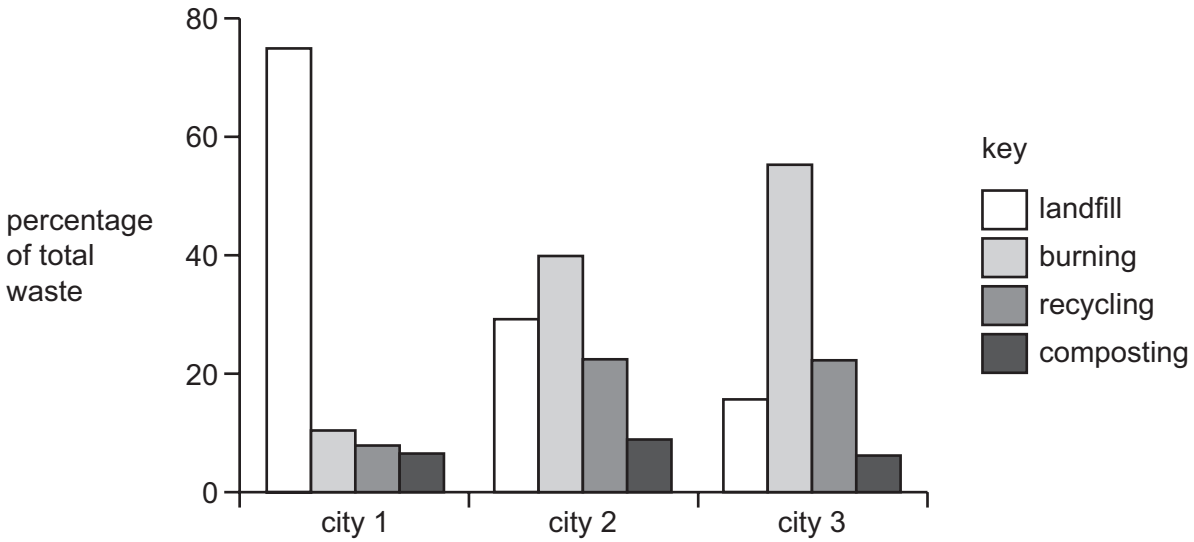
3 It increases phagocytosis.

4 It increases the number of platelets.

Which reasons are correct?

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

22 The graph shows how waste is disposed of in three cities.



Which statement describes waste disposal in **all** of the three cities?

A Burning is the second most common form of waste disposal.

B Landfill is the main form of waste disposal.

C More waste is burnt than recycled.

D Recycling and burning together are the main forms of waste disposal.

23 Which structure connects directly to the alveoli?

A bronchus

B bronchiole

C larynx

D trachea

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24 What is the equation for aerobic respiration?

A glucose + carbon dioxide → oxygen + water

B glucose + oxygen → carbon dioxide + water

C water + carbon dioxide → glucose + oxygen

D water + oxygen → glucose + carbon dioxide

25 Which hormone is secreted by the pancreas?

A adrenaline

B insulin

C oestrogen

D testosterone

26 What is an example of phototropism?

A a chemical produced by a plant

B a painful sensation in response to a stimulus

C the growth of a plant root towards the centre of the Earth

D the growth of a plant shoot towards light

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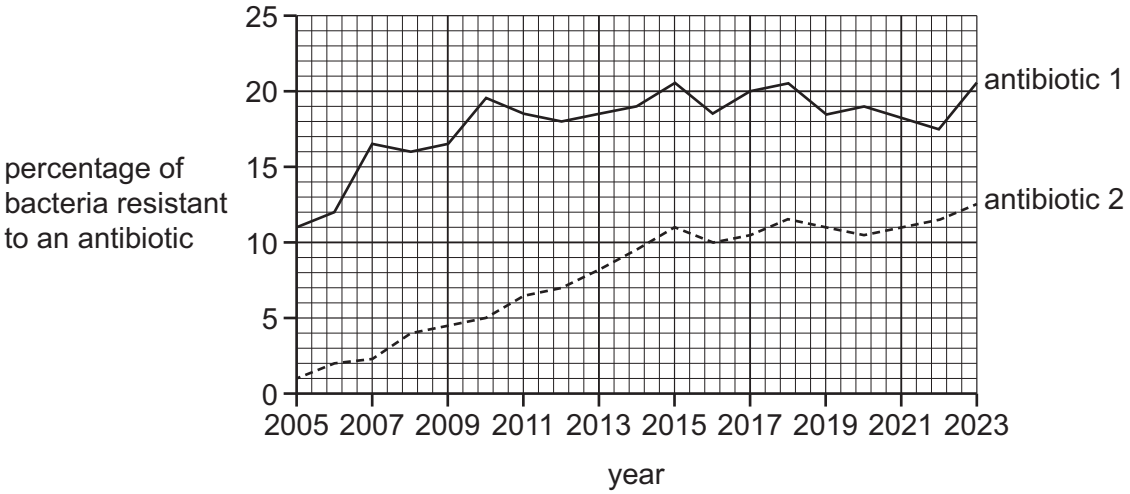
27 The graph shows changes in the resistance of the bacterium *Escherichia coli* to two different antibiotics between 2005 and 2023.



Which statement describes the changes that occurred between 2005 and 2023?

A Between 2010 and 2015, the percentage of bacteria resistant to antibiotic 2 increased by 6%.

B Between 2011 and 2016, the percentage of bacteria resistant to antibiotic 1 continually increased.

C Between 2016 and 2023, the percentage of bacteria resistant to antibiotic 2 continually decreased.

D Between 2020 and 2022, the percentage of bacteria resistant to antibiotic 2 decreased.

28 The nuclei of which two structures fuse during fertilisation?

A two eggs

B two embryos

C two gametes

D two zygotes

29 Which statements about sexual reproduction in plants are correct?

1 Anthers in wind-pollinated flowers are inside the flower.

2 Pollen grains in insect-pollinated flowers are large and sticky.

3 The stigma in insect-pollinated flowers is outside the flower.

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

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30 Which structure is found in both animals and plants?

A cornea

B ovary

C sepal

D stamen

31 Which sex chromosomes are present in a human sperm cell?

A both X and Y chromosomes

B either X or Y chromosomes

C only X chromosomes

D only Y chromosomes

32 What are alleles made of?

A amino acids

B DNA

C genes

D protein

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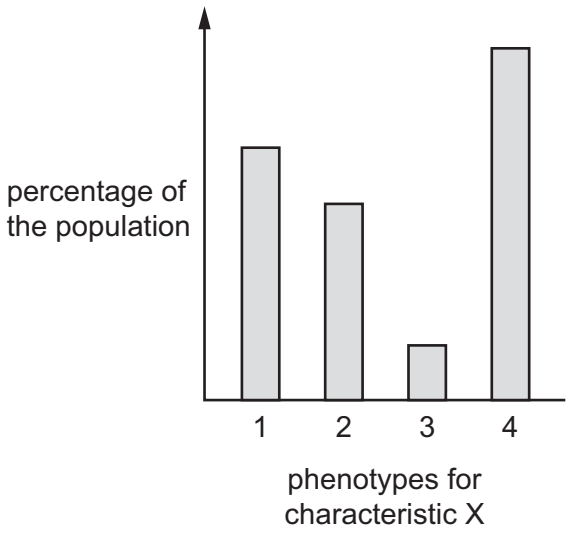
33 The graph shows the percentage of a population with different phenotypes for the same characteristic.



Which characteristic in humans is represented by X?

A ABO blood groups

B arm length

C height

D mass

34 Energy transfers in an ecosystem are listed.

	energy transfer	type of energy
1	Sun to plant	light
2	plant to animal	chemical
3	animal to animal	chemical

Which transfers are correct?

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

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35 Which diagram shows the correct order in a food chain?

A carnivore → carnivore → herbivore → producer

B herbivore → herbivore → producer → carnivore

C producer → herbivore → carnivore → carnivore

D producer → herbivore → herbivore → carnivore

36 Which process removes carbon dioxide from the atmosphere?

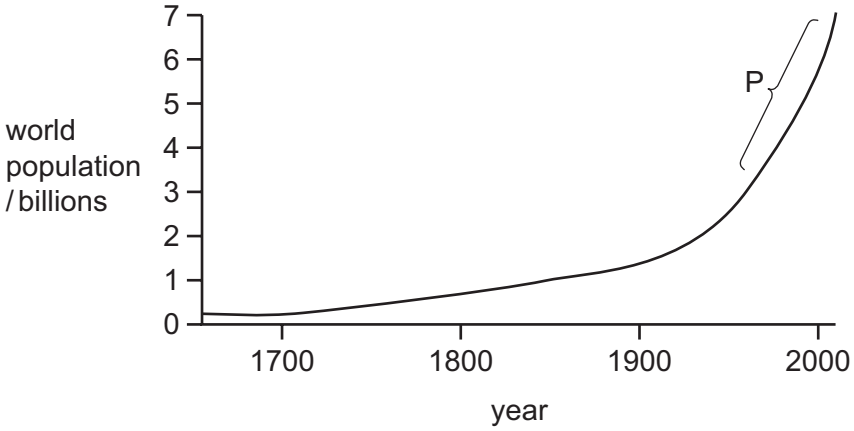
A combustion

B decomposition

C photosynthesis

D respiration

37 The graph shows how the population of the world has increased over time.



Which growth curve phase is represented by region P?

A death phase

B exponential (log) phase

C lag phase

D stationary phase

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38 How do herbicides help to increase food production?

A by increasing biodiversity

B by killing insect pests

C by providing nutrients

D by reducing competition

39 Which product of anaerobic respiration in yeast is used as a biofuel?

A carbon dioxide

B ethanol

C glucose

D oxygen

40 Which statement describes genetic modification?

A changing the genetic material of an organism

B changing the genetic material of plants only

C producing new organisms through fertilisation

D selective breeding of organisms

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