Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **May/June 2023**

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.

IB23 06_0610_12/3RP
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1 Living animals release carbon dioxide.

This is an example of which life process?

A excretion

B movement

C nutrition

D sensitivity

2 Some statements about species are given.

1 Members of a species all look identical.

2 Members of a species belong to the same genus.

3 Members of a species can produce fertile offspring.

4 Species are named using an international system.

Which statements are correct?

A 1, 2, 3 and 4

B 1, 2 and 3 only

C 2 and 4 only

D 2, 3 and 4 only

3 The table shows some features of different animals.

Which animal is a reptile?

	wings	hair	scales
A	✗	✗	✓
B	✗	✗	✗
C	✓	✗	✓
D	✗	✓	✗

4 Which structures are found in the cells of all living organisms?

1 cell membrane

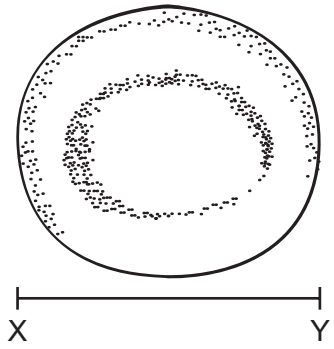
2 chloroplast

3 cytoplasm

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

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5 A diagram of a human red blood cell is shown. The length of line XY on the diagram is 40 mm. The actual width of the cell is 0.008 mm.



What is the magnification of the diagram?

A ×500 **B** ×5000 **C** ×50 000 **D** ×500 000

6 Which statements are correct for **both** diffusion and osmosis?

	involves movement of water only	requires energy from respiration	molecules move from higher concentration to lower concentration
A	✓	✓	✓
B	✓	✓	✗
C	✗	✗	✓
D	✗	✗	✗

key
✓ = yes
✗ = no

7 What is a role of water in digestion?

A It is an enzyme.

B It is a solvent.

C It is soluble.

D It is a mineral.

8 The concentration of sodium ions in the soil is lower than the concentration inside root hair cells.

Which process will be used when sodium ions are taken into root hair cells from the soil?

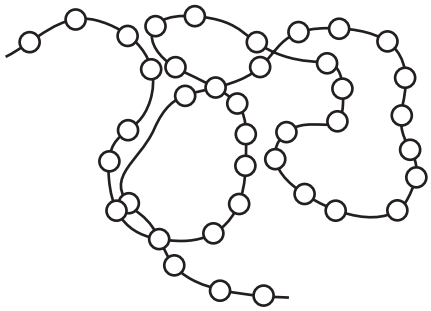
A active transport

B diffusion

C osmosis

D transpiration

9 The diagram represents a protein molecule.



What do the small circles represent?

A amino acids

B fatty acids

C glycerol

D simple sugars

10 Which processes depend on the action of enzymes?

1 digestion

2 osmosis

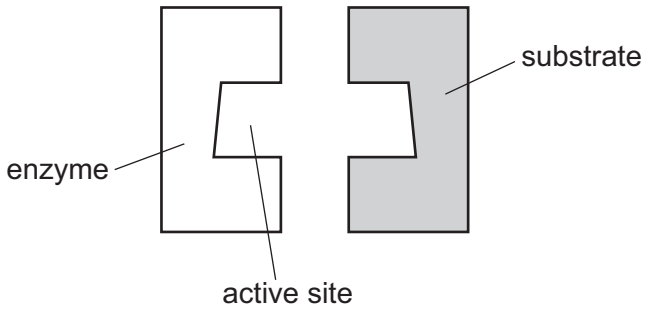
3 respiration

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

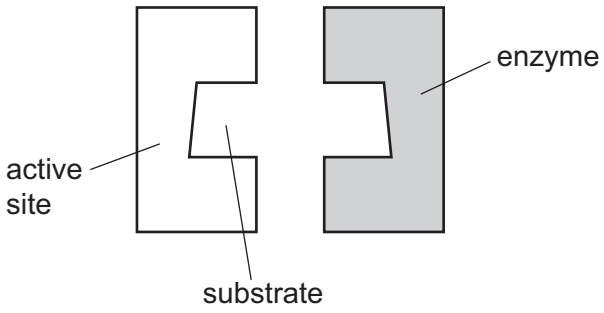
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11 Which diagram of an enzyme, active site and substrate is correct?

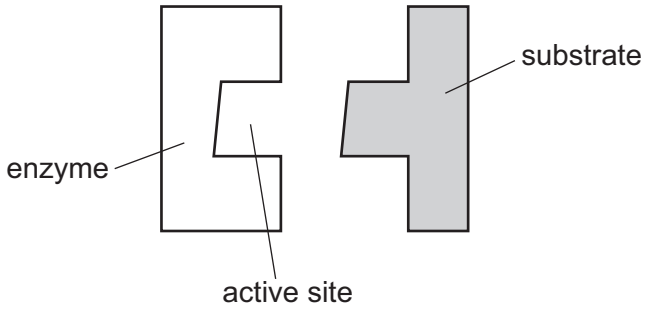
A



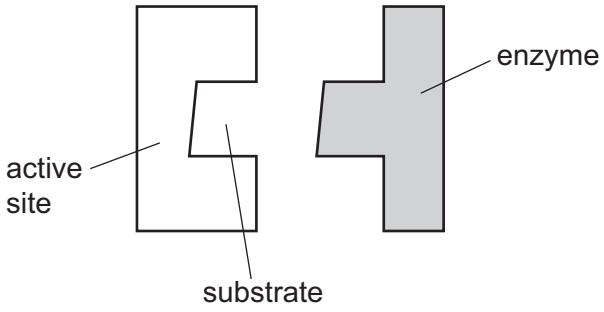
B



C

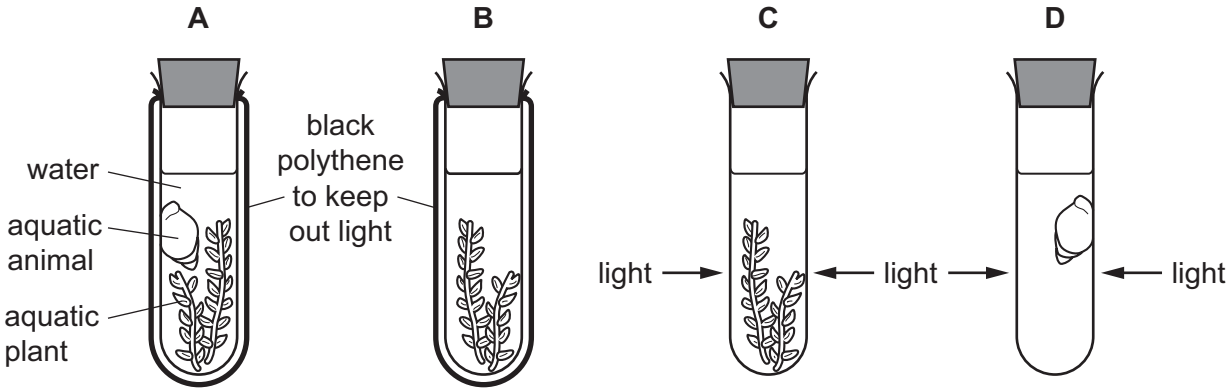


D



12 Four test-tubes are set up as shown.

Which test-tube contains the least carbon dioxide after one hour?



13 Which row shows the uses of some carbohydrates in plants?

	glucose	starch	sucrose
A	cell walls	transport	energy storage
B	energy storage	cell walls	respiration
C	respiration	energy storage	transport
D	transport	respiration	cell walls

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[Turn over

14 The lack of which component of a balanced diet will lead to the development of scurvy?

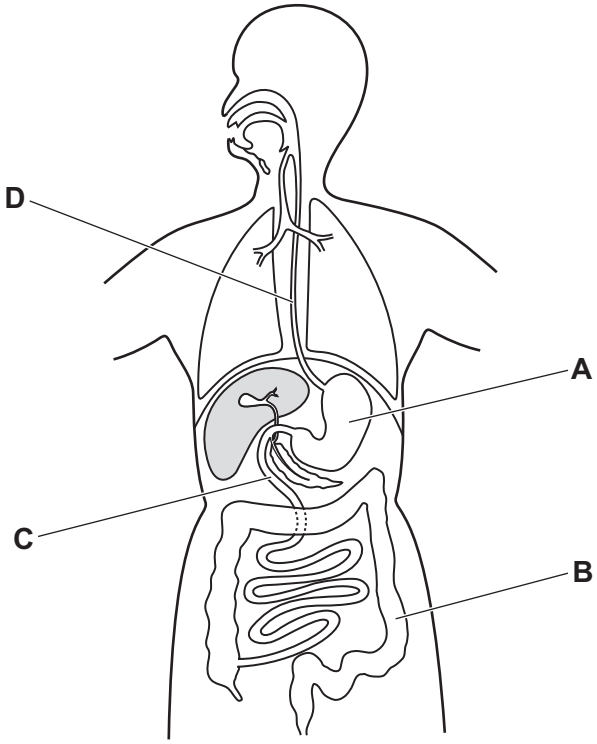
A calcium

B iron

C vitamin C

D vitamin D

15 Which structure is the duodenum?



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16 The food label is from a packet of cereal.

The label can help someone who is concerned about their diet.

Nutrition	
Typical values	100 g contains
Energy	985 kJ 235 kcal
Fat	1.5 g
of which saturates	0.3 g
Carbohydrate	45.5 g
of which sugars	3.8 g
Fibre	2.8 g
Protein	7.7 g
Salt	0.5 g

A person eats 45 g of cereal.

One of the food types listed in the label can help prevent constipation.

How many grams of this food type does the person eat?

A 1.3 g **B** 2.8 g **C** 3.5 g **D** 7.7 g

17 Which pathway is taken by water through a plant?

A root hair → root cortex → xylem → mesophyll → stomata

B root hair → xylem → mesophyll → root cortex → stomata

C stomata → root cortex → xylem → mesophyll → root hair

D stomata → root hair → root cortex → xylem → mesophyll

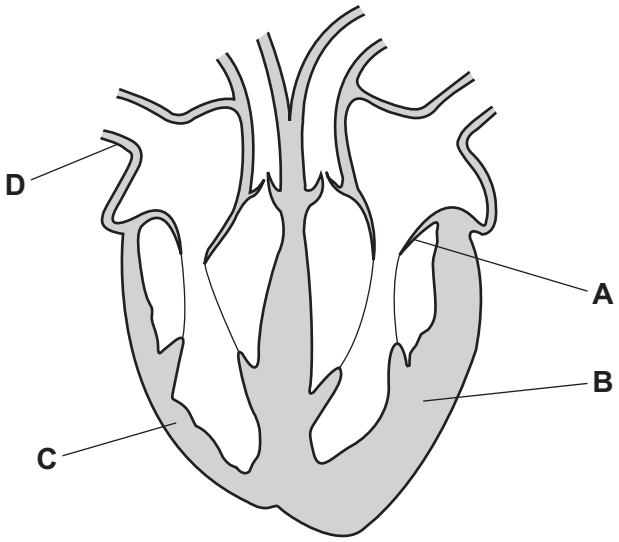
18 Which row shows the transpiration rate for the conditions described?

	wind speed	atmospheric temperature	transpiration rate
A	low	low	fast
B	high	high	slow
C	low	high	slow
D	low	low	slow

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19 The diagram shows the human heart.

Which label shows the left ventricle?



20 Which row shows the features of an artery or a vein?

	blood vessel	diameter of lumen	thickness of wall
A	artery	large	thick
B	artery	small	thin
C	vein	large	thin
D	vein	small	thick

21 What are features of gas exchange surfaces in animals?

A thick-walled and large surface area

B thick-walled and small surface area

C thin-walled and small surface area

D thin-walled and large surface area

22 Which chemical can be used to show the presence of carbon dioxide gas?

A Benedict's solution

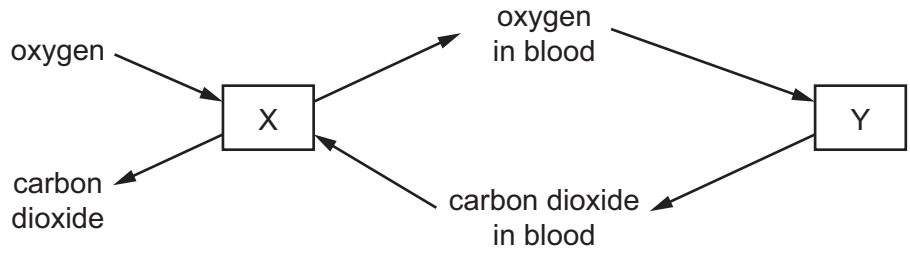
B biuret solution

C ethanol

D limewater

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23 The diagram represents the exchange of gases during breathing and during respiration in the body.



What is represented by X?

A heart

B kidneys

C liver

D lungs

24 Which molecule is produced by anaerobic respiration in yeast?

A carbon dioxide

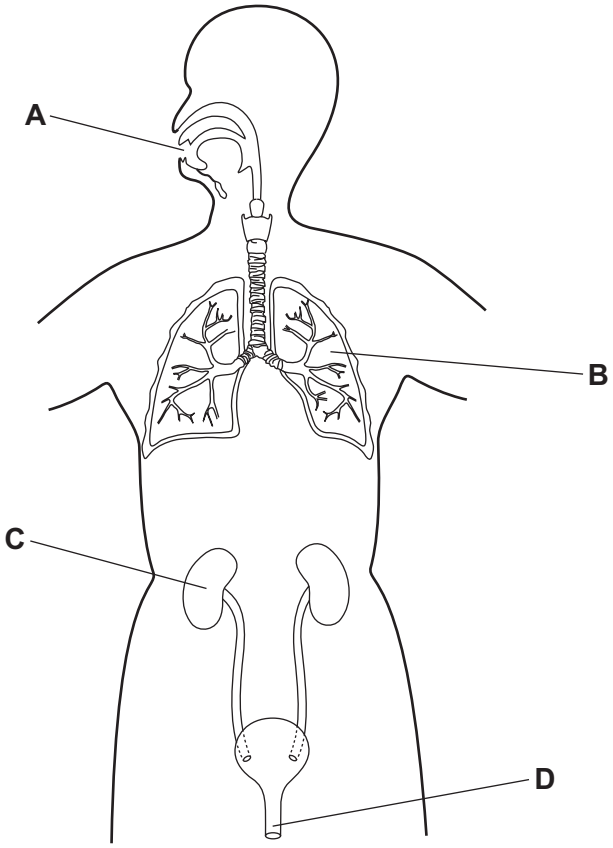
B lactic acid

C oxygen

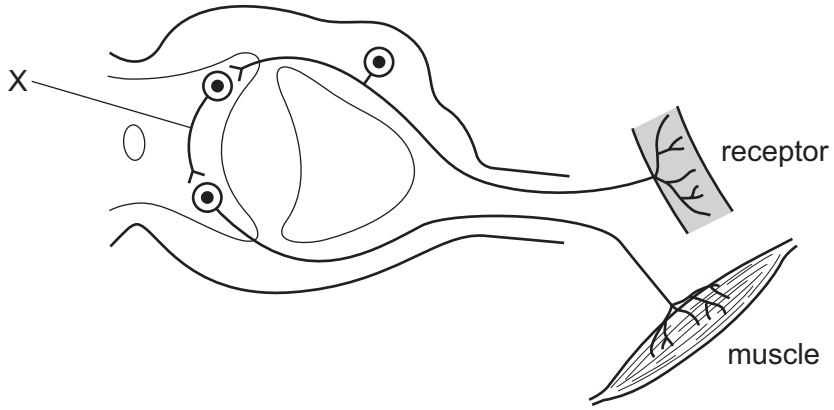
D water

25 The diagram shows the human body and some of its organs.

Which structure removes urea from the blood?



26 The diagram shows the structures in a reflex arc.



What is X?

A effector

B relay neurone

C sensory neurone

D synapse

27 Changes in light intensity cause changes in the diameter of the pupil in the eye.

Which rows show the pupil reflex?

	light intensity	pupil diameter
1	high	increases
2	high	decreases
3	low	increases
4	low	decreases

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

28 A hormone is injected into a person to reduce their blood glucose concentration.

Which endocrine gland is **not** functioning properly in a person who needs to have this injection?

A adrenal gland

B ovary

C pancreas

D testis

29 The table shows which antibiotics are effective against different types of bacteria.

The shaded areas show the antibiotic is effective against that type of bacteria.

	type of bacteria			
antibiotic	MRSA	*Streptococcus*	*Pseudomonas*	*Anaerobes*
1				
2				
3				
4				
5				
6				

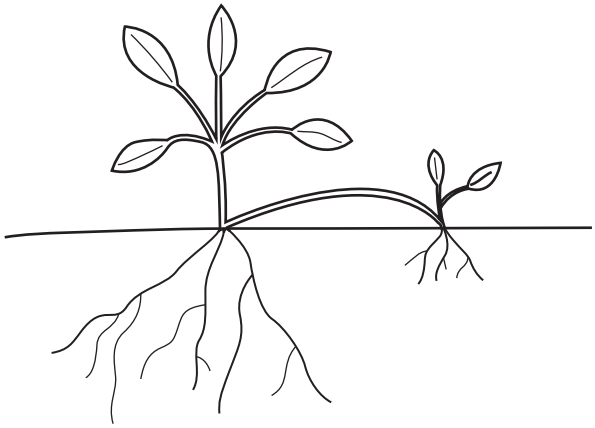
A person has a disease caused by a type of *Streptococcus* bacteria and a second infection caused by a type of *Pseudomonas* bacteria.

Which antibiotic should be taken?

A 1 or 6 **B** 2 or 4 **C** 3 or 4 **D** 5 or 6

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30 The diagram shows one way that a plant can reproduce.



What is a feature of this type of reproduction?

A The offspring show genetic variation.

B Only one parent is required.

C Offspring are easily dispersed over a wide area.

D Pollination by insects is required.

31 Which human characteristics are inherited?

	blood group	eye colour	language	sex
A	✓	✓	✗	✓
B	✓	✓	✓	✗
C	✗	✓	✗	✓
D	✓	✗	✓	✓

key

✓ = inherited

✗ = not inherited

32 In a sperm cell, which structure contains enzymes that can digest the jelly coat of an egg cell?

A acrosome

B flagellum

C mitochondria

D nucleus

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33 When breeding, which pair of parents will be pure-breeding for a particular characteristic?

A a heterozygous and a homozygous individual

B two heterozygous individuals

C two homozygous individuals

D two individuals with the same phenotype

34 In a pea plant, the allele for round seeds, R, is dominant to the allele for wrinkled seeds, r.

If plants with the genotype Rr are crossed, what are the likely proportions of offspring?

A all with round seeds

B all with wrinkled seeds

C 1 with round seeds : 1 with wrinkled seeds

D 3 with round seeds : 1 with wrinkled seeds

35 Which definition of continuous variation is correct?

A variation that results in a limited number of phenotypes between two extremes

B variation that results in a limited number of phenotypes with no intermediates

C variation that results in a range of phenotypes between two extremes

D variation that results in a range of phenotypes with no intermediates

36 Which term is used to describe an organism that makes its own organic nutrients?

A carnivore

B decomposer

C herbivore

D producer

37 What is the principal source of energy for most food chains?

A carbon dioxide gas

B glucose

C oxygen

D sunlight

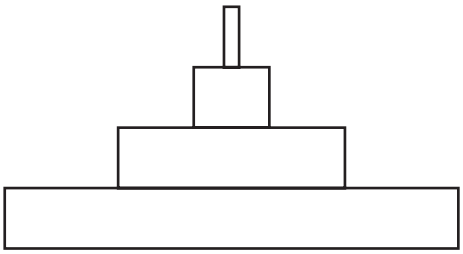
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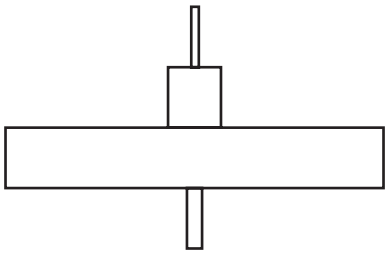
38 A single tree is food for a large population of caterpillars. Several small birds eat the caterpillars. The small birds are eaten by a bird of prey.

Which is the pyramid of biomass?

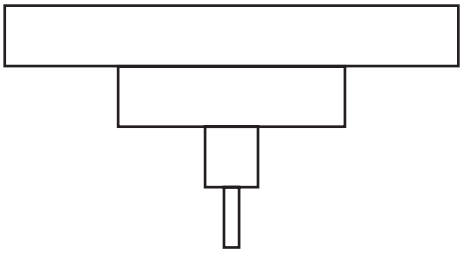
A



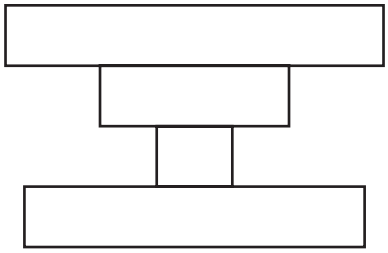
B



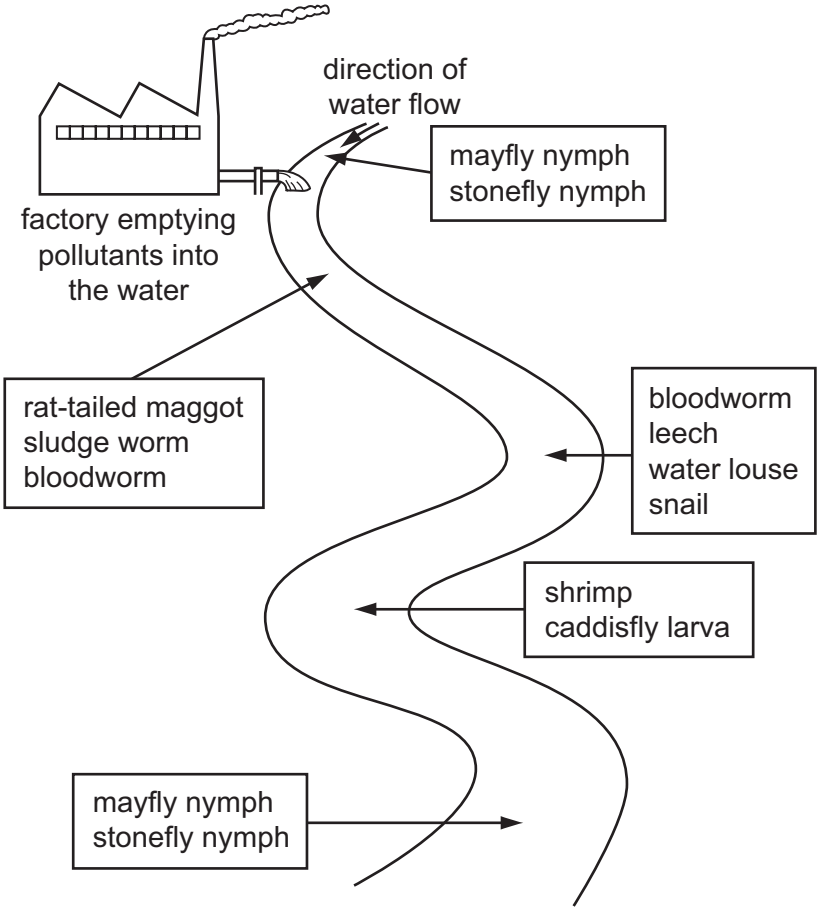
C



D



39 The diagram shows the results of a survey on the types of animals found along a stretch of river near to a factory.



Which animal lives in the least polluted water?

A bloodworm

B caddisfly larva

C leech

D stonefly nymph

40 Bacteria are useful for manufacturing products for human use.

Which statement explains why they are useful?

A Bacteria can be grown without nutrients.

B Bacteria do not have a nucleus.

C Bacteria infect human cells.

D Bacteria reproduce very rapidly.

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