UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/13**

Paper 1 Multiple Choice **October/November 2012**

45 minutes

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

* 8 2 0 5 2 8 4 1 2 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, highlighters, 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.

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.

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1 What is respiration?

A breathing

B giving out carbon dioxide

C releasing energy from food

D taking in oxygen

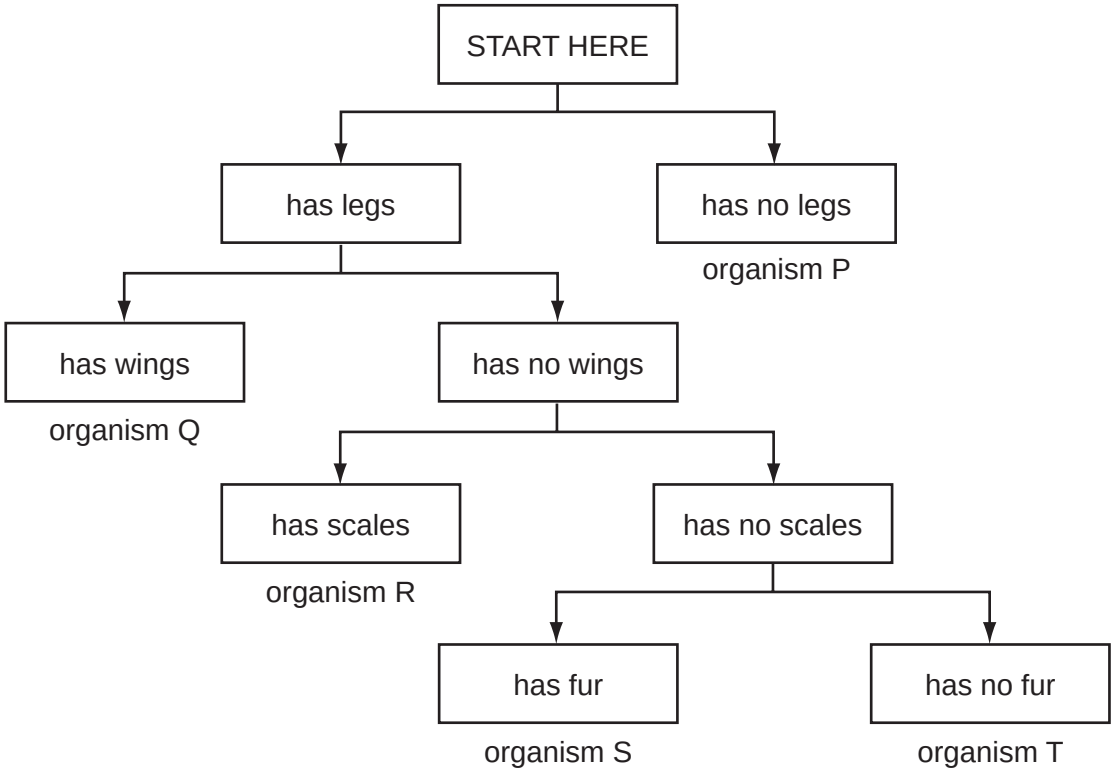
2 The table shows some features of the leaves of four plants.

Which plant is a monocotyledon?

	has broad leaves	has parallel veins
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

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3 The diagram shows a key for five vertebrates.



Which class of vertebrates does organism T belong to?

A amphibians

B birds

C fish

D reptiles

4 The picture shows an animal.



What is the name of this animal according to the **binomial system**?

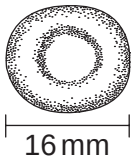
A *catus*

B male African lion

C *Panthera leo*

D top African carnivorous cat

5 The cell shown in the diagram has been magnified 3000 times.



What is the actual diameter of the cell?

A $\frac{16}{3000} = 0.005\,\text{mm}$

B $16 \times 3000 = 48000\,\text{mm}$

C $16 \times 300 = 4800\,\text{mm}$

D $\frac{16}{100} = 0.05\,\text{mm}$

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6 Osmosis is defined as the diffusion of water molecules

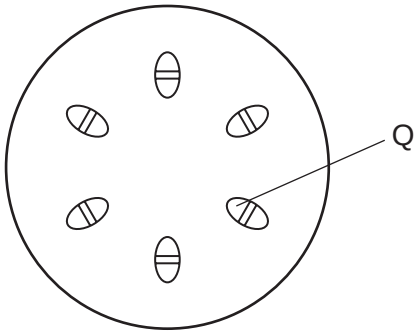
A down their concentration gradient through a partially permeable membrane.

B down their concentration gradient through a permeable membrane.

C up their concentration gradient through a partially permeable membrane.

D up their concentration gradient through a permeable membrane.

7 The diagram shows a cross-section through a plant stem.



Q shows the part that is stained red when the stem is placed in water containing a red dye.

What is found at Q?

A guard cells

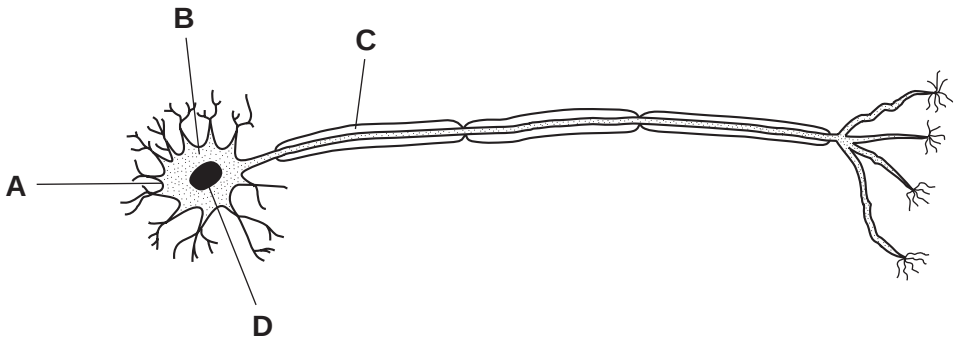
B palisade cells

C phloem

D xylem

8 The diagram shows a motor (effector) neurone.

Which structure is also found in white blood cells, but **not** in red blood cells?



9 At what level of organisation is a leaf?

A organ

B organism

C organ system

D tissue

10 How do carbon dioxide and oxygen move in and out of a leaf mesophyll cell?

A active transport

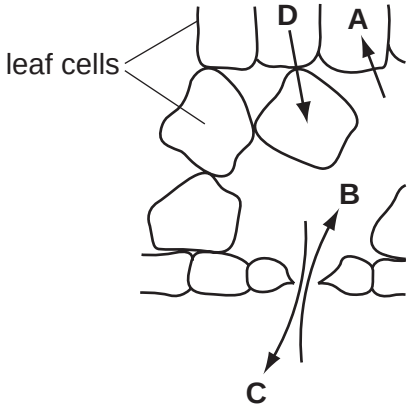
B diffusion

C respiration

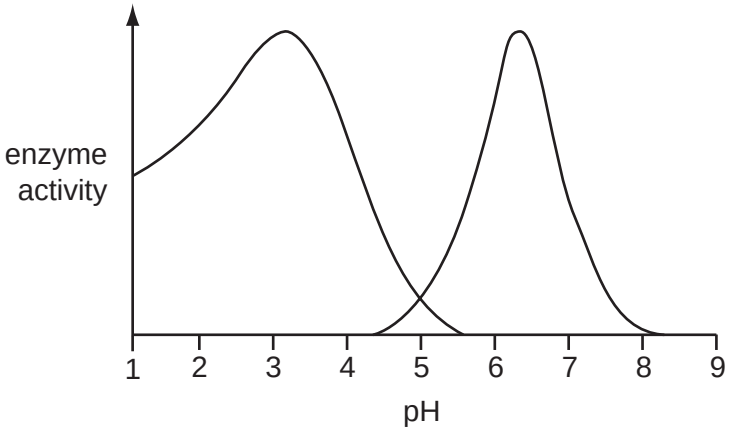
D transpiration

11 The diagram shows part of a section through a leaf.

Which arrow shows the direction of movement of water by osmosis in a leaf?



12 The graph shows the effect of pH on the activity of two enzymes.

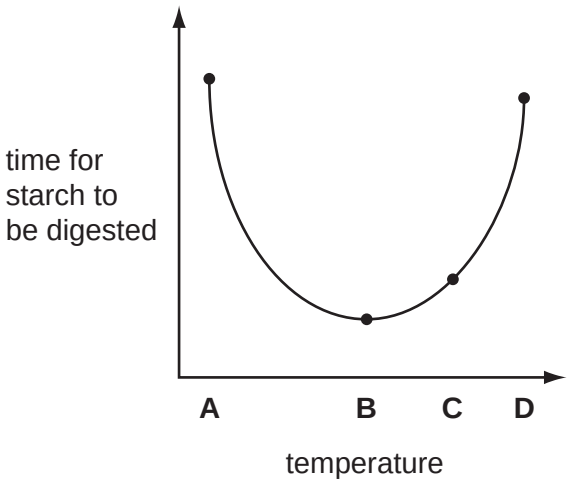


At which pH is the activity of both enzymes the same?

A 1 **B** 3 **C** 5 **D** 8

13 Four identical mixtures of starch and amylase were kept at different temperatures. The graph shows the time taken for the starch to be completely digested at each temperature.

At which temperature is the rate of reaction quickest?



14 Which nutrient produces a purple colour when mixed with biuret solution?

A fat

B protein

C reducing sugar

D starch

15 Which form of energy is stored within glucose molecules made during photosynthesis?

A chemical

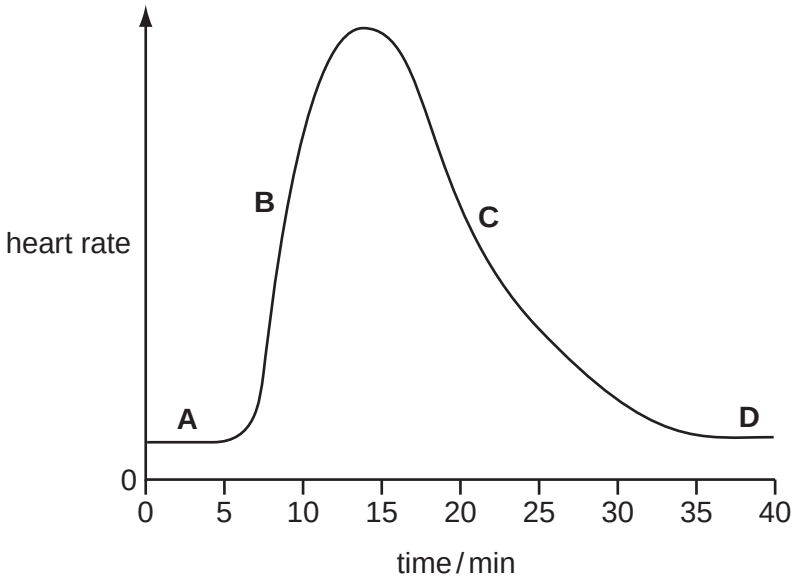
B heat

C light

D mechanical

16 The graph shows the effect of several minutes of vigorous (hard) exercise on heart rate.

Which letter on the graph is at a time when the person is doing this exercise?



17 Which blood vessel, if it becomes blocked, could lead **directly** to a heart attack?

A coronary artery

B pulmonary artery

C pulmonary vein

D vena cava

18 Which substances are dissolved in human blood plasma?

A carbon dioxide, haemoglobin and glucose

B carbon dioxide, oxygen and haemoglobin

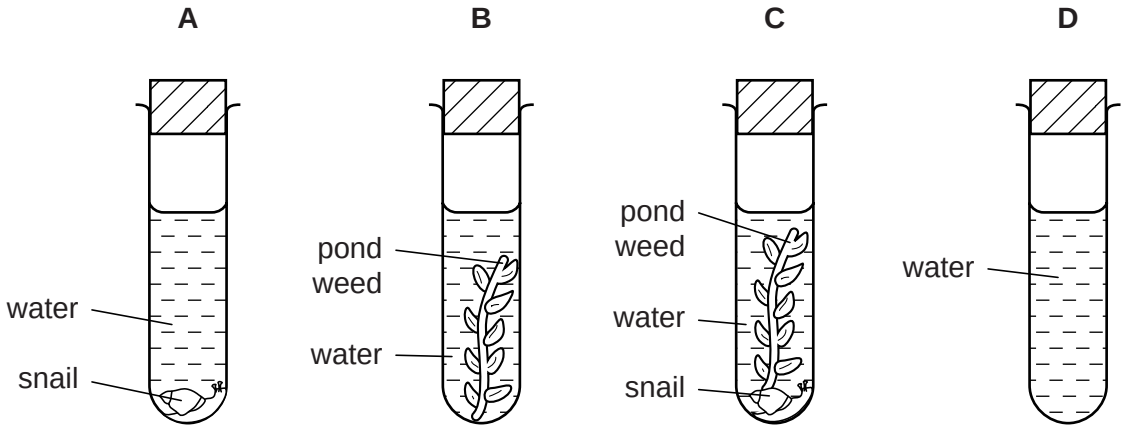
C glucose, hormones and urea

D oxygen, urea and starch

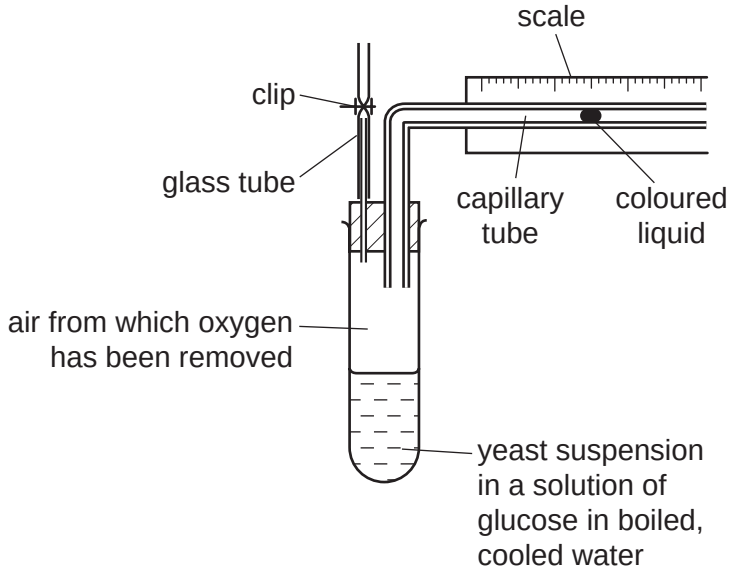
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19 Four test-tubes were set up as shown in the diagram and left in full sunlight.

After several hours, which test-tube would contain the most dissolved carbon dioxide?



20 The diagram shows apparatus used to investigate anaerobic respiration in yeast.



What happens to the coloured liquid?

A moves rapidly to the left

B moves slowly to the left

C moves to the right

D stays still

21 A man injures his arm in an accident. Afterwards, he can feel objects touching his hand, but he cannot move his hand away from them.

What could cause this?

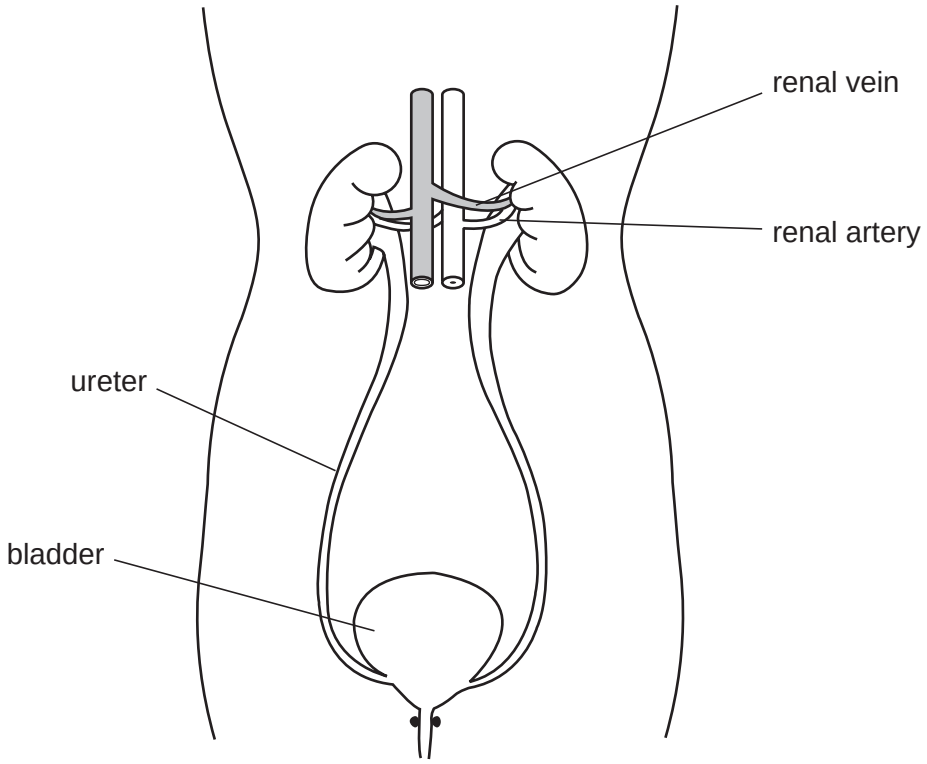
A Receptors in his hand are damaged.

B The nerve connection is cut only between the receptors in his hand and his central nervous system.

C The nerve connection is cut only between his central nervous system and the effectors in his arm.

D Both of these nerve connections are cut.

22 The diagram shows the human urinary system.

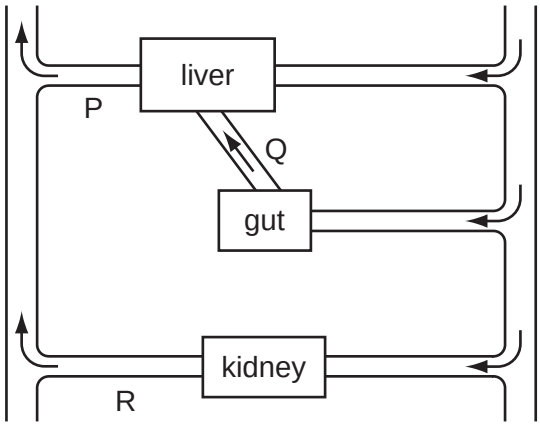


Which row shows substances that are present in each of these structures in a healthy person?

	renal artery	renal vein	ureter	bladder
A	glucose	glucose	salts	urea
B	protein	salts	water	protein
C	salts	water	protein	water
D	urea	glucose	protein	salts

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23 The diagram represents some human organs and their blood vessels.



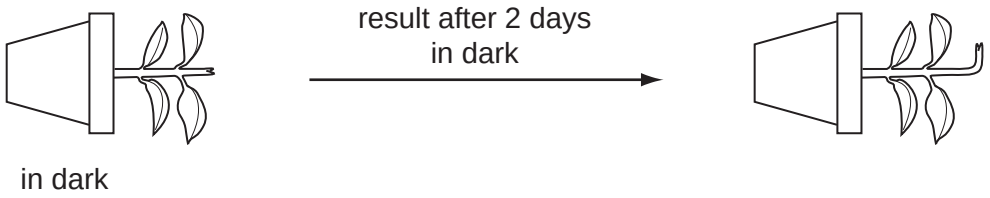
Immediately after taking an alcoholic drink, how would the levels of alcohol compare in blood vessels P, Q and R?

	P	Q	R
A	high	medium	high
B	medium	high	low
C	low	low	medium
D	high	low	low

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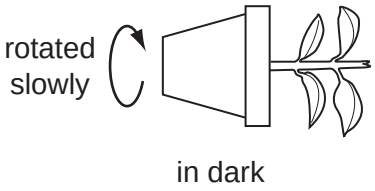
[Turn over

24 The diagram shows an experiment set up to investigate the response of plant stems to gravity.



What is a suitable control for this experiment?

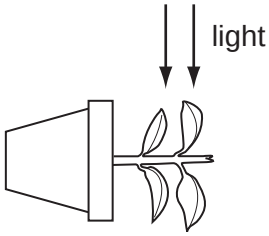
A



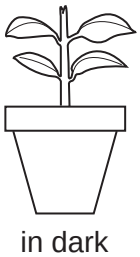
B



C



D

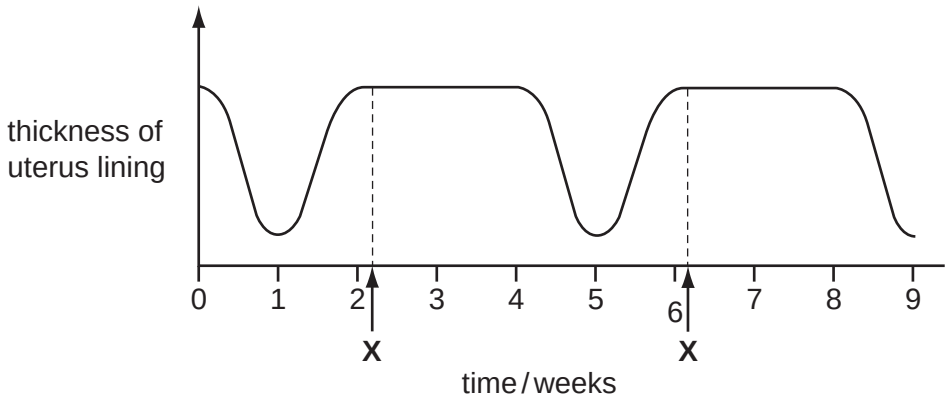


25 When the body temperature rises above 37 °C, which changes help to return the temperature to normal?

	activity of sweat glands	blood vessels near skin surface
A	decreased	constricted
B	decreased	dilated
C	increased	constricted
D	increased	dilated

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26 The graph shows changes in the thickness of the uterus lining of a woman.



What happens each time at **X**?

A fertilisation

B implantation

C menstruation

D ovulation

27 Which method of birth control is based on knowing the stage a woman is at in her menstrual cycle?

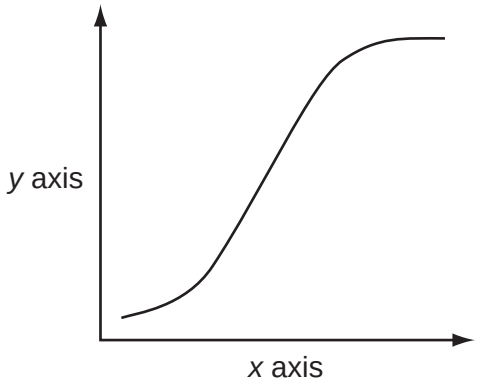
A chemical

B mechanical

C natural

D surgical

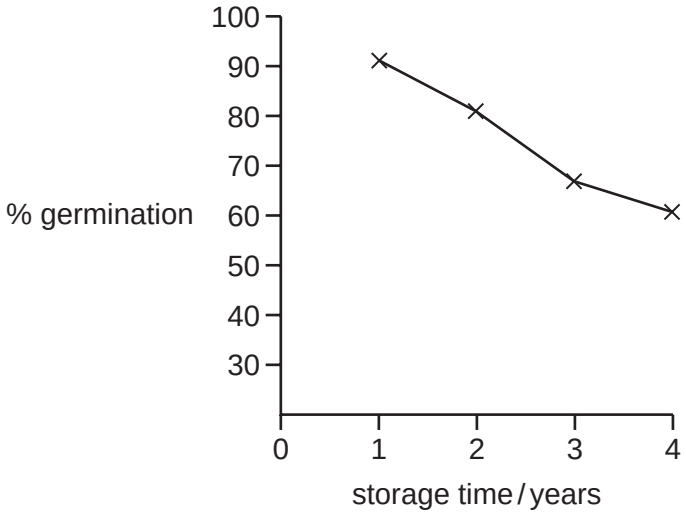
28 The graph shows the growth of a child into an adult.



What should be the labels on the axes?

	x axis	*y* axis
A	age	date
B	age	mass
C	mass	age
D	mass	time

29 The graph shows the effect of storage time on the germination of some seeds.



What can be concluded from this graph?

A Older seeds do not germinate.

B Older seeds germinate better than younger seeds.

C Younger seeds always germinate.

D Younger seeds germinate better than older seeds.

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30 What results from meiosis of a diploid cell?

A genetically different diploid cells

B genetically different haploid cells

C genetically identical diploid cells

D genetically identical haploid cells

31 What is an allele?

A a length of DNA that codes for a gene

B any one of two or more alternative forms of a gene

C a thread of DNA made up of a string of genes

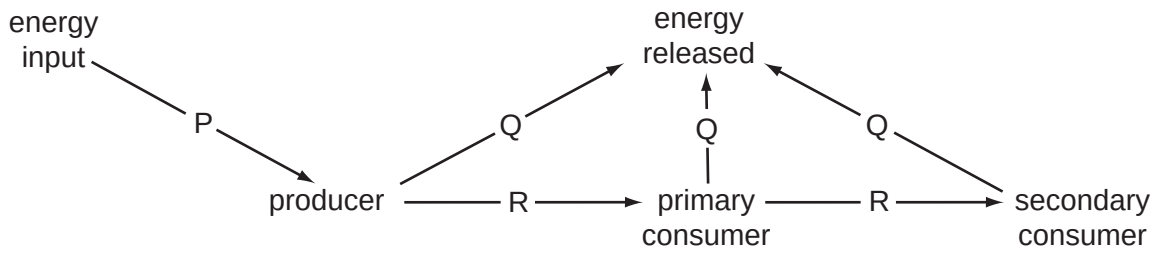
D the genetic make up of an organism

32 In a pond, the biomass at each trophic level is measured. The results are shown in the table.

Which trophic level contains herbivores?

trophic level	mass / g m^{-3}
A	0.1
B	0.6
C	1.2
D	17.9

33 The diagram shows the flow of energy in a food chain.



What are the forms of energy P, Q and R?

	P	Q	R
A	chemical	light	heat
B	heat	chemical	light
C	light	heat	chemical
D	light	chemical	heat

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34 Carbon is essential to life.

Which process provides a carbon-containing compound for all life forms?

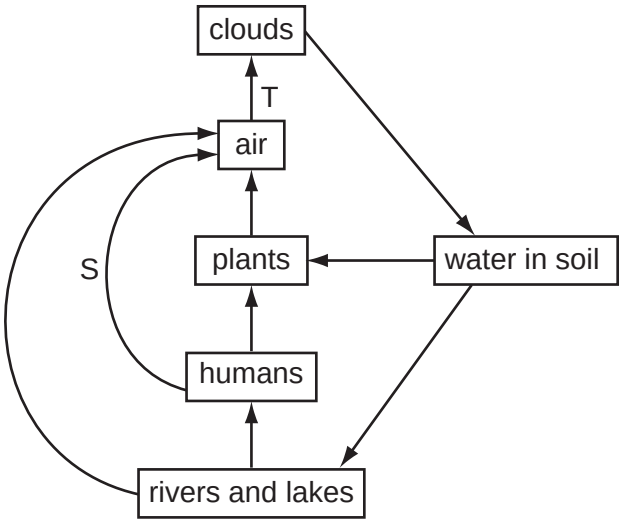
A eating

B gaseous exchange

C photosynthesis

D respiration

35 The diagram shows part of the water cycle.

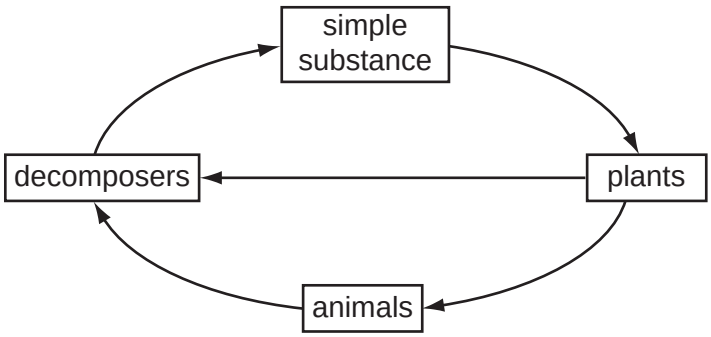


What are processes S and T?

	S	T
A	evaporation	precipitation
B	condensation	drainage
C	evaporation	condensation
D	condensation	evaporation

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36 The diagram shows part of the carbon cycle.



What is the simple substance?

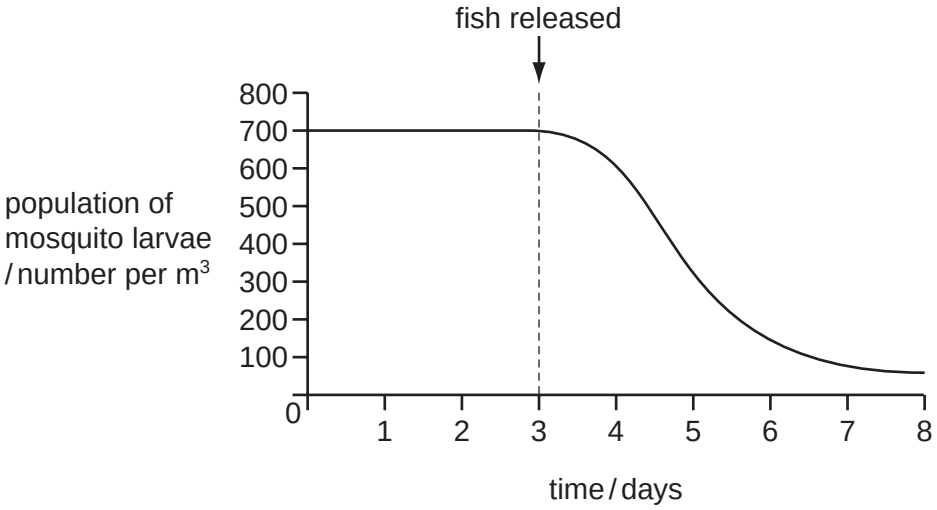
A carbohydrate

B carbon dioxide

C chlorophyll

D light

37 The graph shows the population of mosquito larvae in a pond. On day 3, mosquito fish, which eat mosquito larvae, are released into the pond.



What is the most likely reason for the decline in the population of larvae after day 3?

A disease

B lack of food

C old age

D predation

38 Which two gases **both** contribute to global warming?

A carbon dioxide and methane

B methane and oxygen

C oxygen and sulfur dioxide

D sulfur dioxide and carbon dioxide

39 Which pollutant is **most** likely to cause mutations?

A carbon dioxide

B methane

C nuclear radiation

D sulfur dioxide

40 Insecticides sprayed in low concentrations may increase the yield of a crop, but may also be harmful to wildlife.

What is an explanation for this?

A Insecticides cause acid rain.

B Insecticides enter the food chain.

C Insecticides increase the nitrates in soil.

D Insecticides kill other plants.

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