

Answer ALL the questions. Write your answers in the spaces provided.

1. For each question (a) to (j), choose the correct answer. Put a cross (☒) in the correct box.

(a) The picture shows the reproductive organ of a plant.



What reproductive organ does the picture show? Put a cross (☒) in the correct box.

flower

leaf

stem

root

(1)

(b) Which process takes place only in green plants? Put a cross (☒) in the correct box.

respiration

cell division

growth

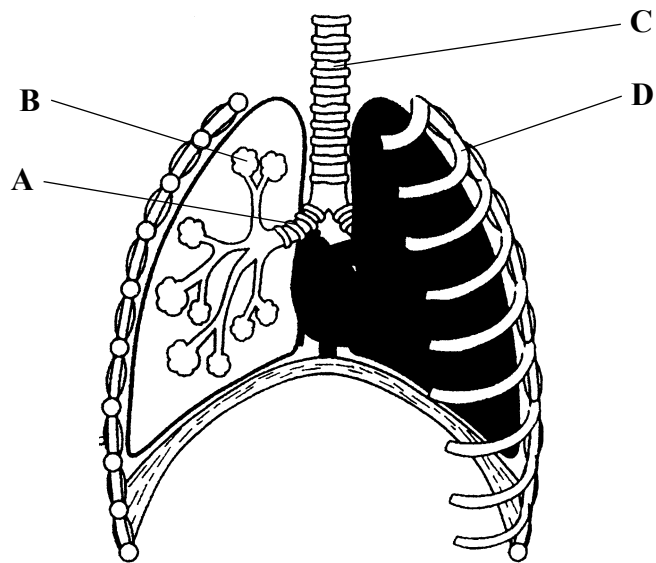
photosynthesis

(1)



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(c) The diagram shows the human thorax.

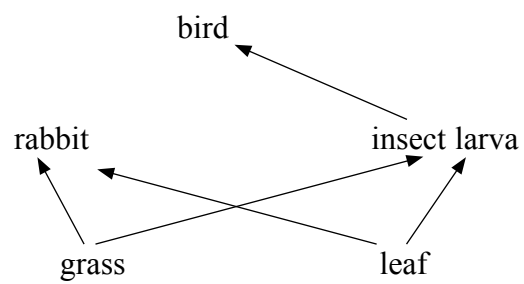


Which letter, A, B, C or D, labels a bronchus? Put a cross (☒) in the correct box.

- A
- B
- C
- D

(1)

(d) How many consumers are in this food web? Put a cross (☒) in the correct box.



- 1
- 2
- 3
- 4

(1)



(e) Which of these organisms is a fungus? Put a cross (☒) in the correct box.

lactobacillus ☒

mucor ☒

maize ☒

housefly ☒

(1)

(f) Which is the correct order of levels of organisation, starting with the simplest? Put a cross (☒) in the correct box.

cell organ system tissue ☒

system cell organ tissue ☒

tissue cell organ system ☒

cell tissue organ system ☒

(1)

(g) How many chromosomes are found in a human sperm cell? Put a cross (☒) in the correct box.

46 ☒

44 ☒

23 ☒

22 ☒

(1)

(h) After leaving the stomach, what does food pass into next? Put a cross (☒) in the correct box.

the large intestine ☒

the small intestine ☒

the pancreas ☒

the mouth ☒

(1)



(i) Which of the following does **not** occur in the water cycle? Put a cross (☒) in the correct box.

precipitation

condensation

evaporation

decomposition

(1)

(j) Which shows the correct sex chromosomes for a man and a woman? Put a cross (☒) in the correct box.

XY and XX

YY and XY

XX and YY

XY and XY

(1)

(Total 10 marks)

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Q1



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2. Farmers use chemical fertiliser to increase the growth of their plants.

Chemical fertiliser contains mineral ions.



(a) Name **two** mineral ions that could be found in chemical fertiliser.

1

2

(2)

(b) Some farmers use waste from their animals as a fertiliser to increase the growth of their plants.

(i) Name **one** animal waste that could be used to increase the growth of plants.

.....

(1)

(ii) Suggest **two** advantages of using animal waste rather than chemical fertiliser.

1

.....

2

.....

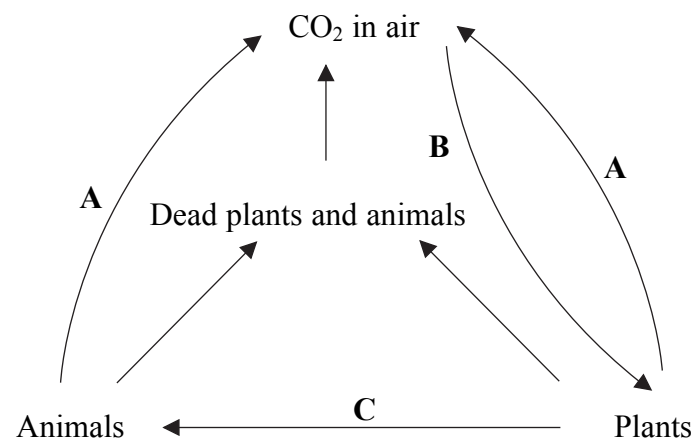
(2)

(Total 5 marks)

Q2



3. Part of a biological cycle is shown below.



(a) (i) Use the words from the list to name the processes labelled **A**, **B** and **C**.

feeding photosynthesis respiration transpiration

A

B

C

(3)

(ii) Name the gas used in respiration.

.....

(1)



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(b) Carbon dioxide in the air can come from the burning (combustion) of fossil fuels.

(i) Name **one** fossil fuel.

.....
(1)

(ii) Explain why the increased burning of fossil fuels could damage the environment.

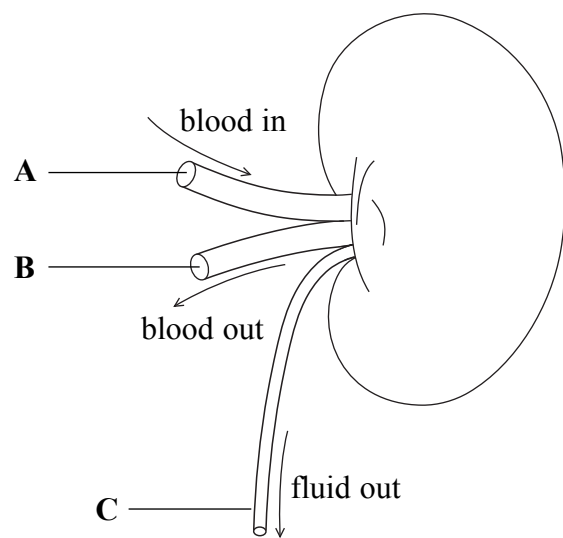
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(3)

(Total 8 marks)

Q3



4. The human kidney controls the water content of the body.



(a) Choose words from the list to name the tubes labelled **A**, **B** and **C**.

urethra ureter renal vein renal artery

A

B

C

(3)

(b) Tube **C** carries substances to the bladder. Name **one** substance, other than water, carried in tube **C**.

.....

(1)



Leave
blank

(c) Explain how the amount of water in the bladder of a person would change if each of the following occurs.

(i) The person drinks a large volume of water.

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.....
.....
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(2)

(ii) The person does some vigorous exercise.

.....
.....
.....
.....

(2)

(Total 8 marks)

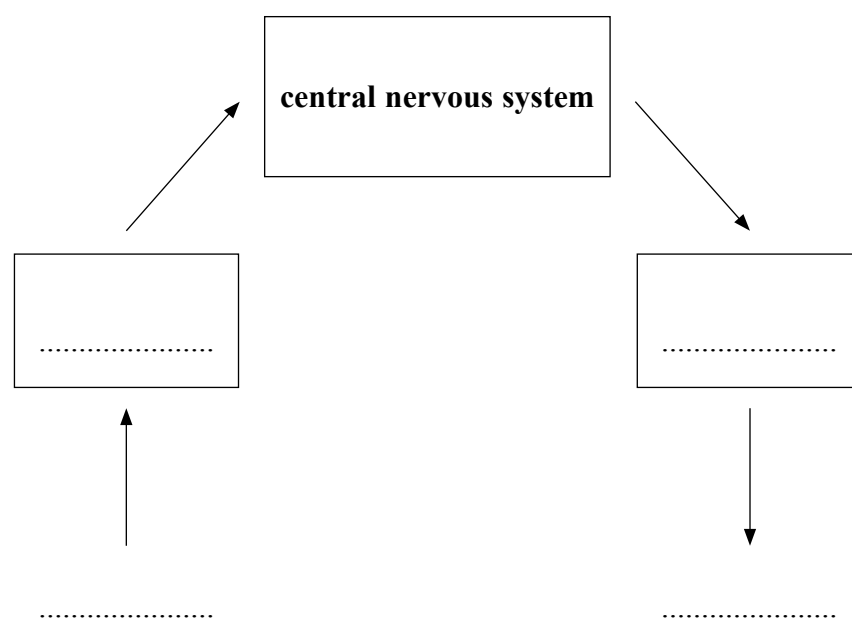
Q4



5. (a) The human body can respond to changes in the environment.

Use the words below to complete the diagram to show the pathway of a coordinated response.

effector receptor response stimulus



(3)

(b) Humans can respond using nerves or hormones. The way these work are different.

Complete the table by writing the word **yes** or **no** in each empty box to show the way that nerves and hormones work.

Description	Hormones	Nerves
Response is usually slow	yes	no
Response lasts a long time		
Are specialised cells		
Are carried in blood stream		

(3)



Leave
blank

(c) Choose **one** hormone that you have studied to complete the sentences.

One hormone I have studied is called This hormone
is made in the part of the body called the The effect
of this hormone is to

(3)

(d) Plants also respond to changes in their environment.

Describe how a plant shoot responds to light coming from one side.

.....
.....
.....
.....

(2)

Q5

(Total 11 marks)



Leave blank

6. Farmers want to control the number of organisms that damage their crops. One method uses chemicals called pesticides.

(a) Suggest how pesticides help farmers to grow better crops.

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.....
.....
.....
.....
.....

(3)

(b) Some farmers use biological control as a method to reduce the number of organisms that damage their crops.

(i) Give **one** example of biological control and name the organism it is used to control.

.....
.....
.....
.....

(2)

(ii) Give **two** advantages of using biological control when compared with pesticides.

1
.....
2
.....

(2)

(c) Give **one** example of the way that genetically modified plants could be used to improve crop yield.

.....
.....

(1)

(Total 8 marks)

Q6



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blank

7. Living organisms have certain characteristics in common. The table gives descriptions of some of these characteristics.

Complete the table by filling in the gaps.

Characteristic	Description
moving	not staying in the same place
excreting	
	increasing in size and mass
	getting energy from food
reproducing	

(Total 4 marks)

Q7



H 2 9 1 6 5 A 0 1 5 2 4

8. (a) Substances move into and out of cells by different methods.

Three methods, **A**, **B** and **C**, are described below.

- A** movement of substances against a concentration gradient
- B** movement of water from a dilute solution to a more concentrated solution through a partially permeable membrane
- C** movement of substances down a concentration gradient

Complete the table by putting the correct letter for each method.

Method	Letter of description
diffusion	
osmosis	
active transport	

(3)

(b) Complete the sentences below by writing a correct word or phrase in the blank spaces.

(i) An example of diffusion in the lung of a mammal involves a substance called oxygen, which moves from the to the
.....

(2)

(ii) An example of osmosis in the kidney of a mammal involves a substance called, which moves from the nephron to the
.....

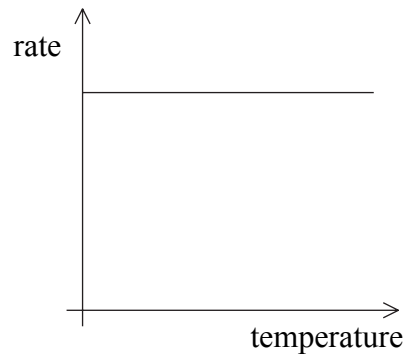
(2)

(iii) An example of active transport in a flowering plant involves uptake of a mineral salt, which moves from the to the in a root hair cell.

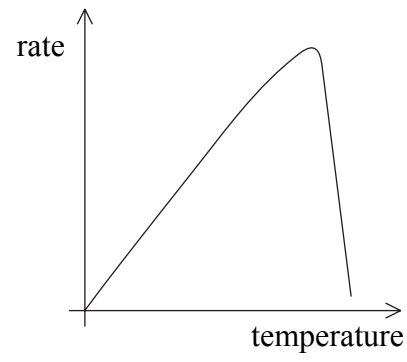
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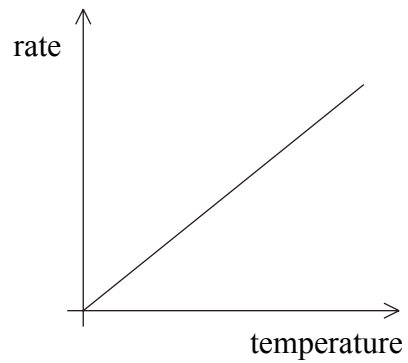
(c) The graphs show the effect of changing the temperature on the rate of movement of substances into cells.



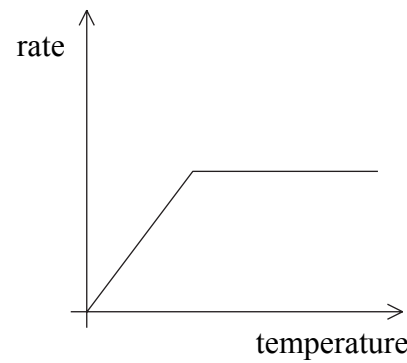
A



B



C



D

(i) Which graph shows the effect of temperature on diffusion?

..... (1)

(ii) Which graph shows the effect of temperature on active transport?

..... (1)

(Total 11 marks)

Q8

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9. A habitat is a place where organisms live. The food chains below are from different habitats.

From a seashore

seaweed → periwinkle → oystercatcher
(a mollusc) (a bird)

From the edge of a field

blackberry → bank vole → tawny owl
(a fruit) (a mammal) (a bird)

(a) (i) Name **one** primary consumer in these food chains.

.....
(1)

(ii) What is the original energy source for these food chains?

.....
(1)

(b) The following food chains come from a woodland environment.

leaf litter → earthworm → blackbird → sparrow hawk
dead mouse → blowfly larvae → common frog → grass snake

Other than the names of the organisms, give **two** ways in which these food chains differ from the examples in part (a).

1
.....
2
.....
(2)



Leave
blank

(c) (i) Name **two** groups of organisms that can act as decomposers in food chains.

1

2

(2)

(ii) Describe the role of decomposers in the carbon cycle.

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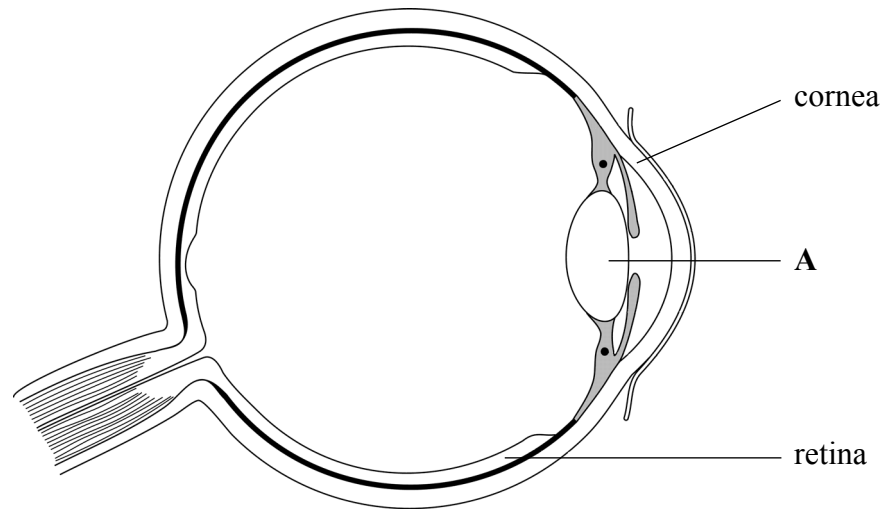
(3)

Q9

(Total 9 marks)



10. The diagram shows a section of the human eye.



(a) Name the part labelled A.

..... (1)

(b) Some people have a rare genetic condition that makes the cornea become cloudy. As a result they find it difficult to see clearly and may become blind.

(i) Suggest why a cloudy cornea makes it difficult for a person to see clearly.

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.....
..... (2)



Leave blank

(ii) The condition for cloudy cornea is caused by a dominant allele **N**. The recessive allele, **n**, results in a clear cornea.

A couple plan to have children. The father is heterozygous for cloudy cornea and the mother is homozygous recessive.

Complete the genetic diagram to show the genotypes of the parents, the gametes and the possible genotypes and phenotypes of their children. Use **N** for the dominant allele and **n** for the recessive allele.

	Father		Mother
Genotypes of parents	and
Gametes			
Genotypes of children			
Phenotypes of children			

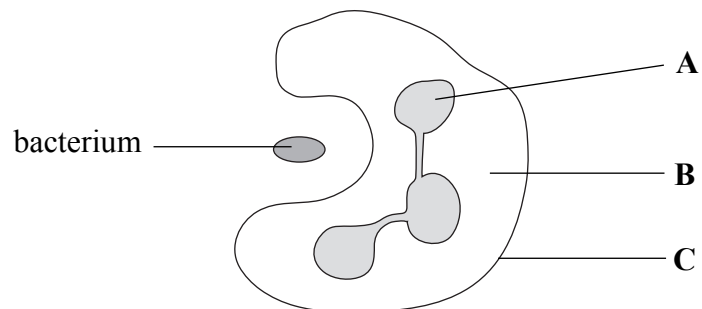
(4)

Q10

(Total 7 marks)



11. The diagram shows a white blood cell ingesting a bacterium.



(a) Complete the table to give the names and functions of the parts labelled A, B and C.

Letter	Name	Function
A		
B		
C		

(6)

(b) Describe what happens to the bacterium after it has been ingested by the white blood cell.

.....

.....

.....

.....

(2)

(c) Normal blood contains 7000 white blood cells per mm³. A person with a mild infection had blood with 10 500 white blood cells per mm³. Calculate the percentage increase in white blood cells. Show your working.

Answer

(2)

(Total 10 marks)

Q11



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12. The technique of selective breeding can be used to produce a crop of tomato plants that flower early.

The table shows the steps taken to breed early-flowering tomato plants.

Complete the table by using numbers to show the correct order of the steps.

Step	Order of step
select early-flowering offspring plants	
allow seeds from early-flowering plants to grow	
select early-flowering plants	1
grow early-flowering offspring plants	5
repeat the process for several generations	
collect seeds from early-flowering plants	

Q12

(Total 4 marks)

23



Turn over

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13. Explain how growing crops in glasshouses can alter the yield of a crop.

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Q13

(Total 5 marks)

TOTAL FOR PAPER: 100 MARKS

END

