KING'S COLLEGE JUNIOR SCHOOL
WIMBLEDON

King's College School

Transfer Paper

Specimen

BIOLOGY

This exam is 40 minutes long.

Answers should be written on the question paper.

Answer **all** questions.

Please fill in the following details

Name:……..

Form:……

Please answer all questions.

1. **Underline** the word or phrase which best completes each of the following sentences.

a) Our blood contains red blood cells. Their main function is to

absorb water **transport glucose**

fight infection **transport oxygen**

b) The food which contains the most carbohydrate is

bread **chicken** **fish** **lettuce**

c) The substance which is not excreted by the human body is

carbon dioxide **faeces** **urine** **water**

d) The condition which is not needed for the germination of seeds is

oxygen **soil** **suitable temperature** **water**

e) The type of organism which photosynthesises in a food chain is a

herbivore **producer**

primary consumer **secondary consumer**

f) A raw material for photosynthesis is

carbon dioxide **carbon monoxide**

glucose **oxygen**

g) The main function of a plant's root hairs is to

help glucose enter the plant **help water to enter the plant**

make new cells for growth **store food**

h) The width of a cell is usually measured in

macrometres **metres** **micrometres** **millimetres**

i) An animal cell does not have

a cell wall **a cell membrane** **cytoplasm** **a nucleus**

j) In the human body the liver is situated

above the heart **below the thorax**

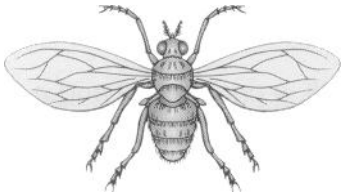
inside the thorax **between the lungs**

Maximum 10 marks

2. Each of the animals in the drawings below belongs to a different group.

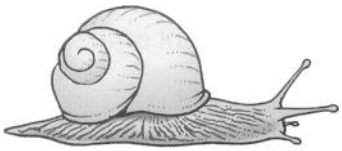
(a) On the line beneath each drawing, write the name of the group the animal belongs to.
Choose names from the list below.

amphibians crustaceans insects mammals molluscs reptiles

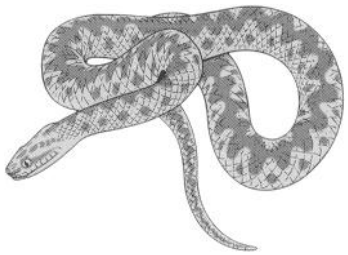


..... A

..... B



..... C



..... D

4 marks

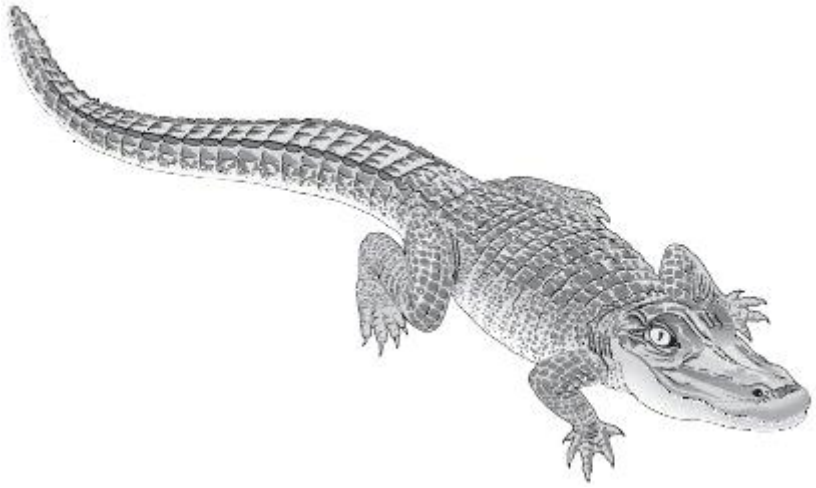
(b) Which of the animals drawn above are invertebrates? Give the correct letters.

..... and .....

2 marks

Maximum 6 marks

3. The drawing below shows an alligator.



(a) Alligators are carnivores.
What does the word carnivore mean?

.....

1 mark

(b) Alligators lay eggs in nests made from plant material.
The eggs have tough shells containing calcium carbonate.

(i) How does the eggshell help the developing alligator to survive before it hatches?

.....

.....

1 mark

(ii) Rotting plant material in the nest is acidic.
When the acid comes into contact with calcium carbonate in the eggshell it makes the shell weaker.

Why does the acid weaken the eggshell?

.....

.....

1 mark

(iii) Suggest **one** reason why it is helpful to the developing alligator in the egg if the eggshell becomes weaker.

.....

.....

1 mark

(c) The table below shows the percentage of female and male alligators that hatch from the eggs when the eggs are kept at different temperatures.

temperature (°C)	% eggs hatching as females	% eggs hatching as males
26	100	0
28	100	0
30	100	0
32	86	14
34	0	100
36	0	100

(i) Use the table to suggest how a zookeeper could make sure only females hatch from the eggs.

.....

.....

1 mark

(ii) Between which **two** temperatures are 50% of the eggs likely to hatch as females?
Tick the correct box.

between 26°C and 30°C ☐

between 30°C and 32°C ☐

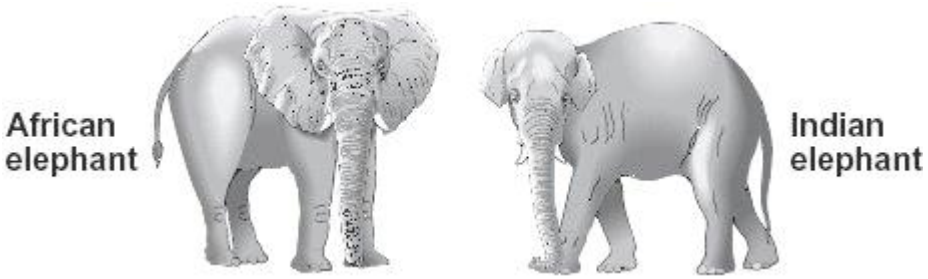
between 32°C and 34°C ☐

between 34°C and 36°C ☐

1 mark

maximum 6 marks

4 (a) Elephants keep cool by losing heat from their ears.



Predict which elephant can lose more heat from its ears.

..... elephant

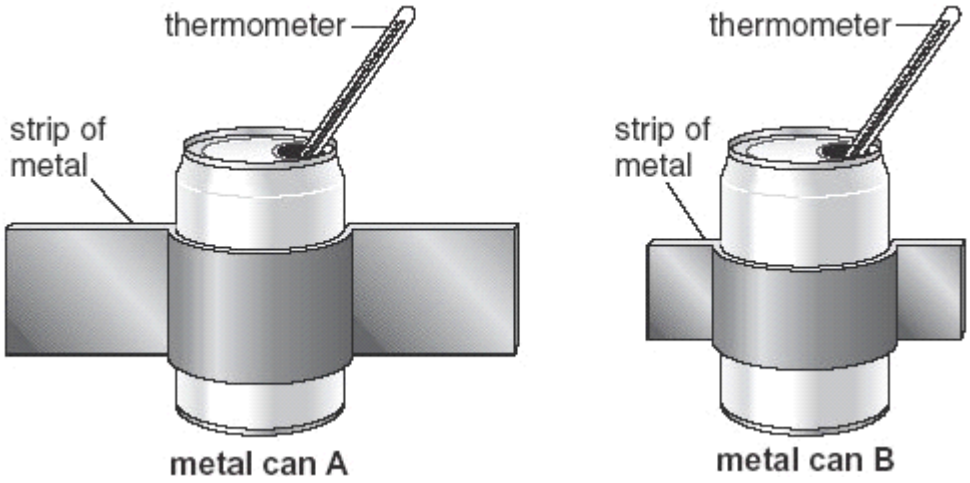
Give the reason for your answer.

.....

.....

1 mark

(b) Ben filled two identical cans with 250 cm^3 of hot water.
He wrapped strips of metal around them to model the elephants' ears.



He recorded the temperature of the water in each can every 5 minutes.
The table shows his results.

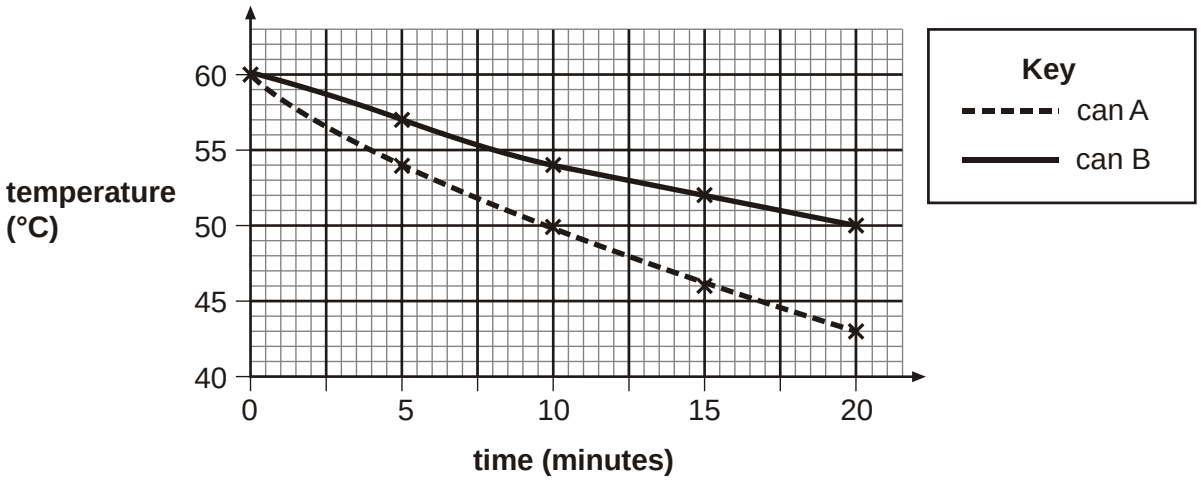
time (minutes)	temperature (°C)	
	can A	can B
0	60	60
5	54	57
10	50	54
15	46	52
20	43	50

(i) Ben started with water at the same temperature in both cans.
Give **one** other way he made his test fair.

.....

1 mark

(ii) He plotted the results for **can A** and **can B** and drew lines of best fit.



Why is it more useful to present these results in a graph rather than a table?

.....

1 mark

(iii) The water in **can A** cooled more quickly than the water in **can B**.
Does this support your prediction in part (a)?
Tick the correct box.

yes ☐ no ☐

Explain your answer.

..... 1 mark

(c) Ben repeated the investigation. Instead of a thermometer he used a temperature sensor and a data logger.
Give **one** advantage of this.

.....

.....

1 mark

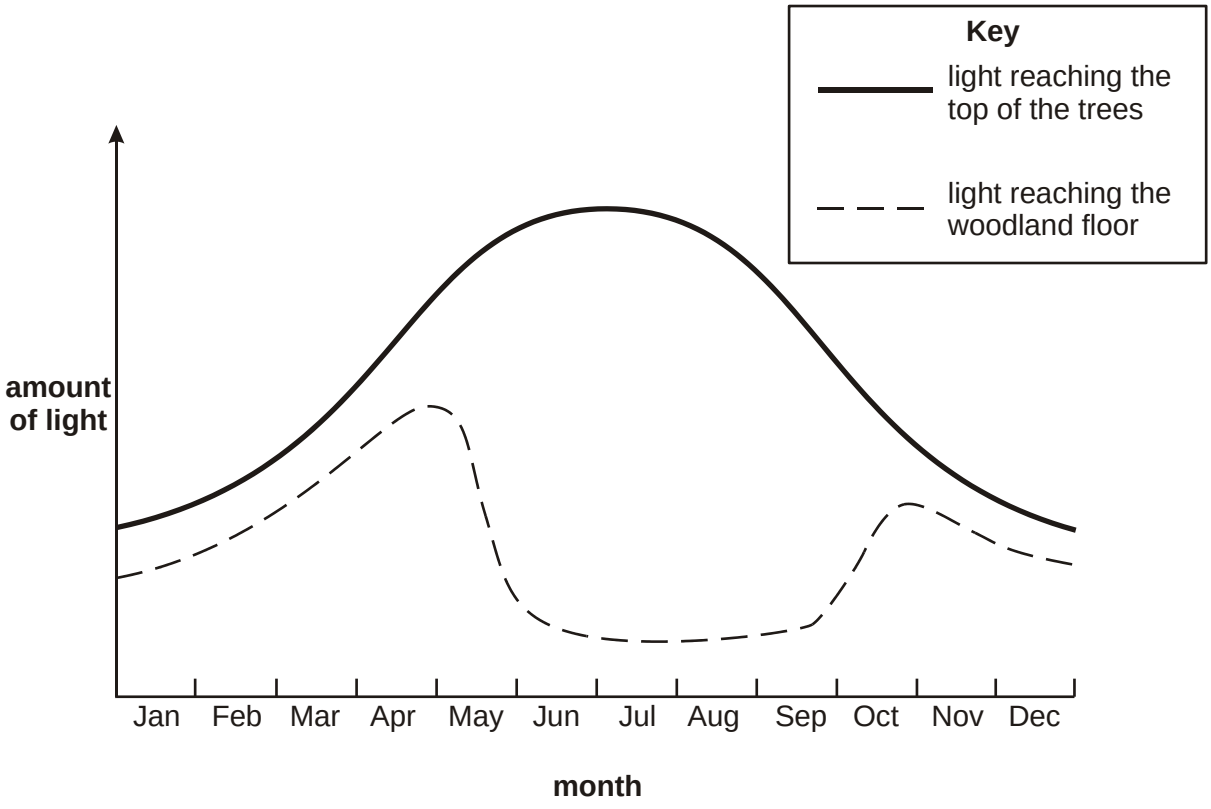
maximum 5 marks

5 The drawings below show the trees in a woodland area at the beginning of May and at the end of May.

beginning of May

end of May

The graph below shows the amount of light reaching the top of the trees and the woodland floor over one year.



(a) Why does the amount of light reaching the woodland floor decrease during May?

.....

.....

1 mark

(b) Plants grow on the woodland floor.

Explain why these plants grow bigger **and** faster when there is plenty of light.

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.....

.....

2 marks

(c) **Respiration** takes place in the cells of all plants.

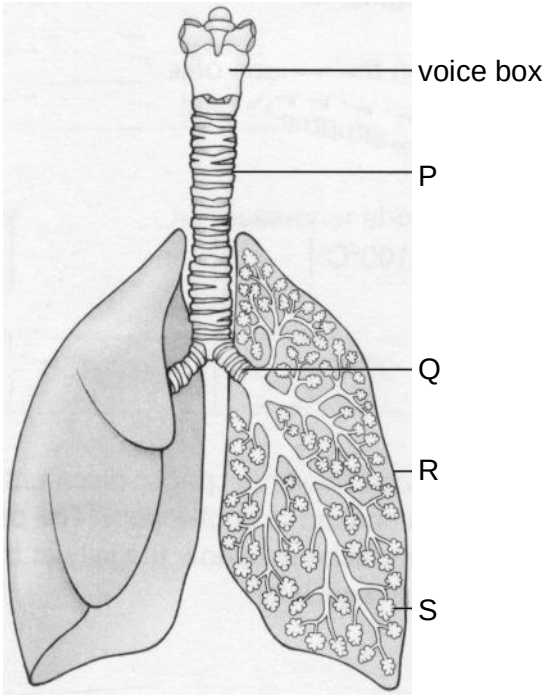
Complete the word equation for **respiration**.

oxygen + ... ⟶ carbon dioxide + ...

2 marks

maximum 5 marks

6. The diagram below shows part of the respiratory system.



(a) From the diagram, give the letters which label:

(i) the trachea; ……

1 mark

(ii) alveoli. ……

1 mark

(b) (i) Which gas passes into the blood from the alveoli?

……..…

1 mark

(ii) Which gas passes out of the blood into the alveoli?

……..…

1 mark

(c) The walls of the capillaries and the alveoli are very thin.
Why do they need to be thin?

…….

…….

1 mark

(d) There are millions of alveoli in the lungs. They provide a very large surface area.
Why is a large surface area necessary?

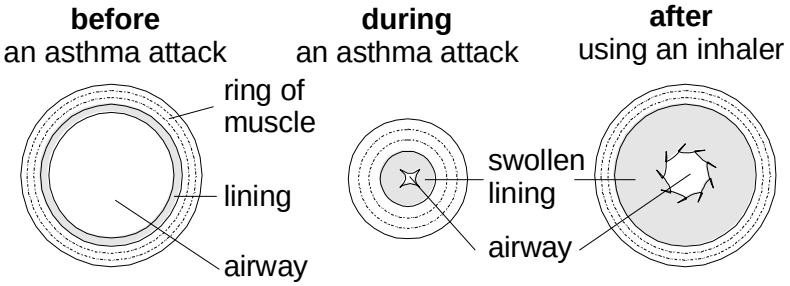
…….

…….

1 mark

(e) A person who has an asthma attack finds it difficult to breathe. An inhaler helps the person breathe more easily.

The diagrams show a cross section of one of the small tubes (bronchioles) in the lungs.



Use the information above to help you answer the following questions.

(a) Describe the way the airway changes when the inhaler is used, and how this change makes it easier to breathe.

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2 marks

Maximum 8 marks

7.

'Wilting roses are a thing of the past.'

Scientists at the University of Leeds have found a way to modify the genes of flowering plants.
They claim that flowers from modified plants remain fresh in a vase of water for up to six months longer than flowers from unmodified plants.

Plan an investigation you could carry out in the school laboratory to test the claim that flowers from modified plants last for much longer than flowers from unmodified plants.

You will be provided with flowers from modified plants and from unmodified plants.

In your plan give:

- the **one** factor you will change as you carry out your investigation;
  (This is the independent variable.)
- the factor you will measure;
  (This is the dependent variable.)
- **one** of the factors you should control to ensure a fair test;
- the time scale for the investigation.

Title.....

Aim.....

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Apparatus.....

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Diagram

Method.....

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Results (expected).....

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Conclusion (expected).....

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maximum 10 marks