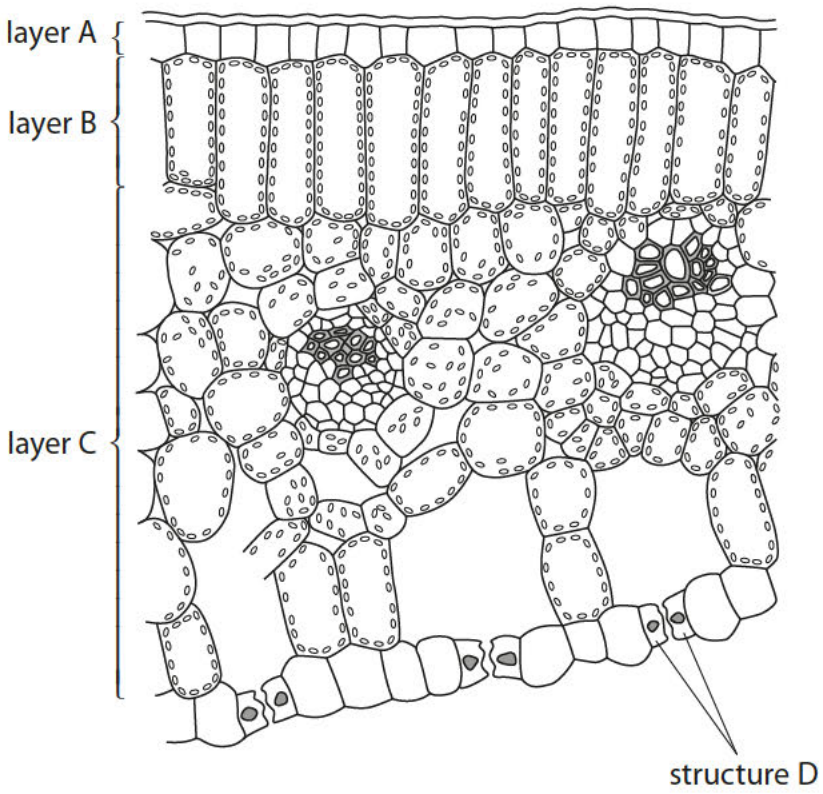
1 The diagram shows a cross section through a leaf.



(a) Each part of the leaf is adapted for a specific function.

Name each part of the leaf and explain how it helps the leaf in photosynthesis.

(i) Layer A

(2)

(ii) Layer B

(3)

(iii) Layer C

(3)

(iv) Structure D

(2)

(b) Water lilies float on the surface of ponds. Structure D is found on the upper surface of a water lily rather than the lower surface.

Suggest a reason for this adaptation.

(2)

.....

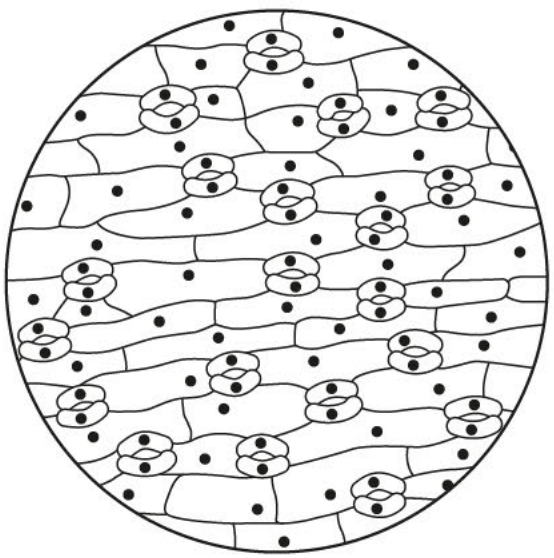
.....

.....

.....

(c) A student examined the upper and lower surfaces of a leaf from a land plant using a microscope.

This is her diagram of the lower surface.



(i) How many stomata are shown in the diagram?

(1)

.....

(ii) Suggest how the upper surface of the land plant would differ from this diagram.

(1)

.....

.....

.....

(Total for Question = 14 marks)

2 Eating garlic is thought to reduce the chance of being bitten by insects, such as mosquitoes.

Design an investigation to find out if people who have eaten garlic are less likely to attract mosquitoes than people who have not eaten garlic.

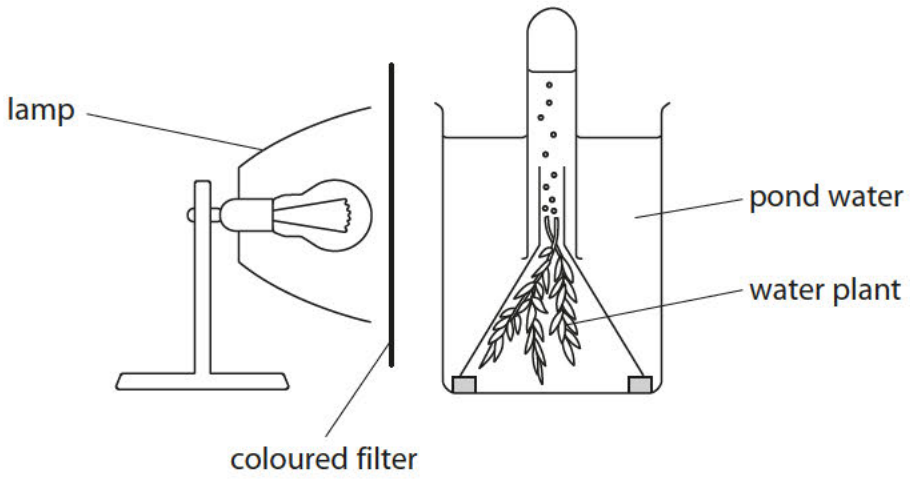
Your answer should include experimental details and be written in full sentences.

(6)

(Total for Question = 6 marks)

3 A student carries out an experiment to investigate the effect of changing the colour of light on the rate of photosynthesis in a water plant.

She sets up the apparatus shown.



(a) (i) Name the gas given off during photosynthesis.

(1)

.....

(ii) Explain how the student should control two variables in her investigation.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(b) The table shows the results the student obtained from her investigation.

Colour of light	Number of gas bubbles released in one minute			
	trial 1	trial 2	trial 3	average
Red	23	26	25	
Blue	19	18	21	19
Green	12	16	6	14

(i) Complete the table by calculating the average rate of photosynthesis for red light.

(1)

.....

(ii) Explain whether the results for each colour are reliable.

(2)

.....

.....

.....

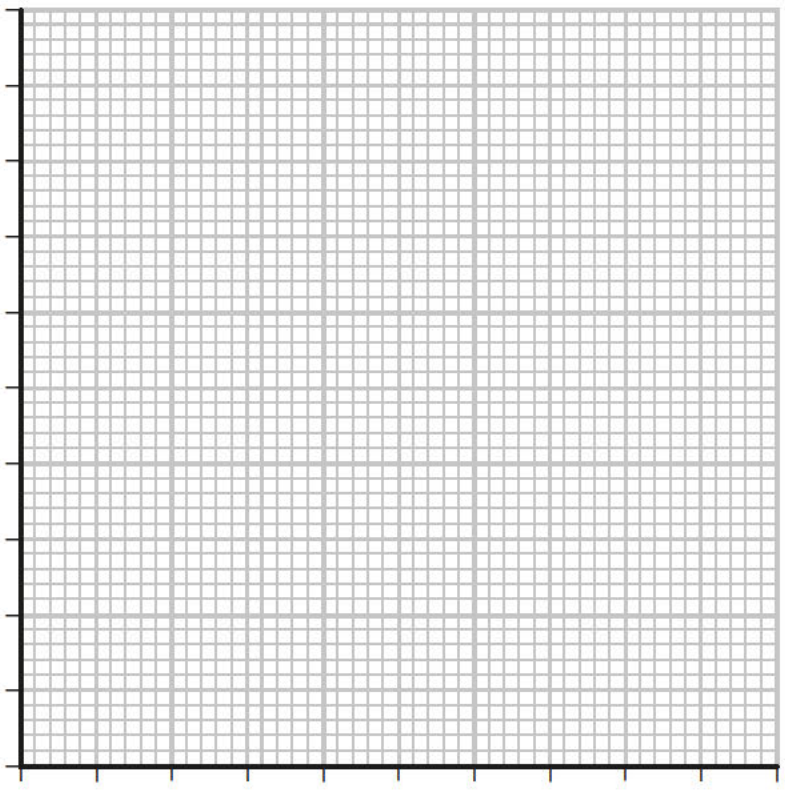
.....

.....

.....

(c) Plot a bar graph to show the effect of the different colours of light on the average rate of photosynthesis.

(5)



(d) Suggest why there is a difference in the average rate of photosynthesis between blue light and green light.

(2)

.....

.....

.....

.....

(Total for Question = 15 marks)

4 The passage describes the role of the blood transport system.

Complete the passage by writing a suitable word in each blank space.

(8)

The blood cells are transported in a straw-coloured liquid

called ..... . In this liquid there are

..... blood cells that contain the protein

..... that is used to carry oxygen around the body.

The oxygen is used by the body cells in ..... respiration.

The gas ..... produced by the cells in respiration is

transported to the lungs and is exhaled with water vapour when we breathe out.

Other components transported in the plasma are .....

that help the blood to clot following a cut or injury, and white blood cells that are

involved in preventing infection. Some of these white blood cells release specific

molecules called ..... to destroy bacteria. Other white

blood cells called ..... can surround and engulf

invading bacteria.

(Total for Question = 8 marks)

5 Describe an investigation to find out if adding vitamin D to the diet of young children will help to prevent rickets (a deformation of the legs).

Your answer should include experimental details and be written in full sentences.

(6)

(Total for Question = 6 marks)