Name……..... **School:.....**

ALDENHAM SCHOOL

13+ Biology sample paper
2011

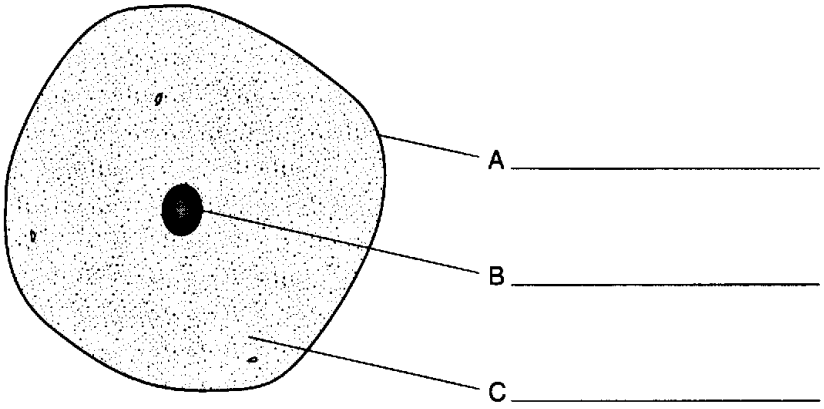
ANSWER ALL QUESTIONS

TIME ALLOWED – 20 MINUTES

25 Marks

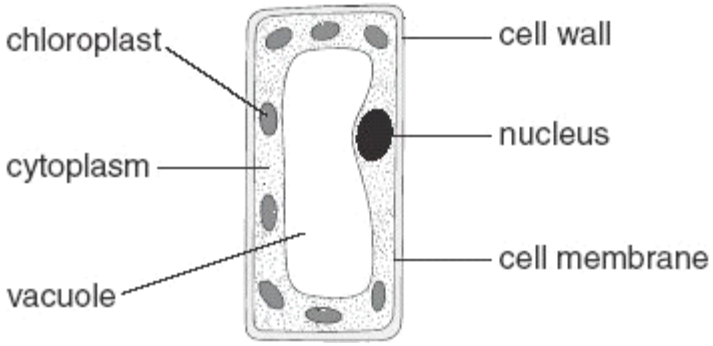
1. The diagram below shows a cell from the inside of a human cheek.

(a) On the diagram, label parts A, B and C.



[1]

2. The diagram below shows a plant cell.



(a) (i) Give the function of the nucleus.

.....

.....

[1]

(ii) Give the function of the chloroplasts.

.....

.....

[1]

(iii) Give the function of the cell wall.

.....

.....

[1]

(b) The drawing shows part of a blackberry plant.

Photosynthesis takes place in the leaves of the blackberry plant. Complete the word equation for photosynthesis.

water + carbon dioxide → ..... + oxygen [1]

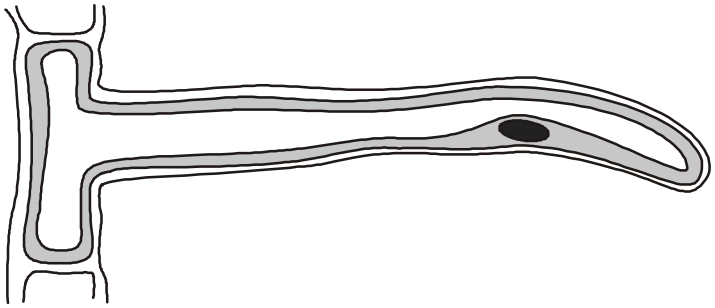
(c) Jonathan studied a blackberry plant growing in a shady place and a blackberry plant growing in a sunny place.

Jonathan found that the plant in the shady place had larger leaves. Why is it an advantage for plants in the shade to have leaves with a large surface area?

.....

..... [1]

(d) Explain how root hair cells increase the amount of water absorbed by plants



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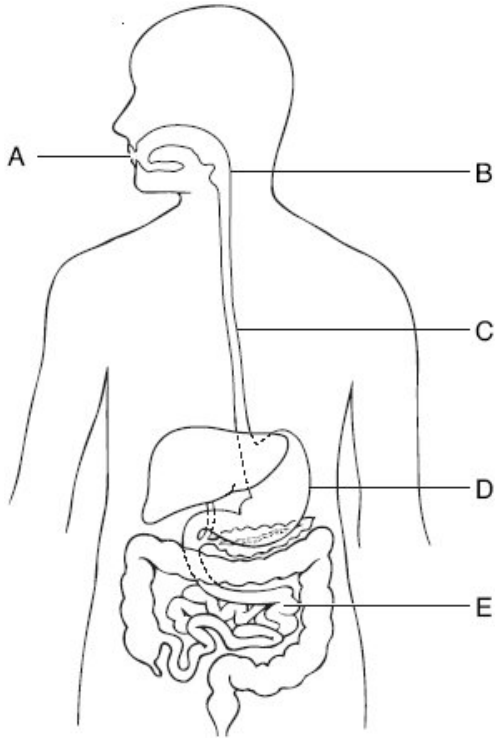
..... [1

3. The diagram below shows the digestive system.



(a) (i) Give the letter which labels the stomach.

..... [1]

(ii) Give the letter which labels the small intestine.

..... [1]

(iii) Glucose is absorbed in the small intestine.

What carries glucose from the intestine to other parts of the body?

..... [1]

(b) Some athletes take glucose tablets before a race.

Why do they take glucose?
Tick the correct box.

for growth	☐	for healthy bones and teeth	☐
to prevent disease	☐	to provide energy	☐

[1]

(c) The table below shows what four people ate for lunch.

name	lunch
Jon	chicken and salad
Nadia	cheeseburger and chips
Clare	lemonade and a jam doughnut
Zak	mushroom soup and an orange

(i) Whose lunch had the most sugar in it?

..... [1]

(ii) Whose lunch had the most fat in it?

..... [1]

(d) Unbalanced diets can give people problems with their health.

Draw **one** line from each unbalanced diet to the health problem it can cause. [2]

unbalanced diet	health problem
too much fat	not much energy
too much sugar	heart disease
not enough protein	tooth decay
not enough carbohydrate	poor growth

4. The table below shows the mass of six nutrients in 100 cm^3 of three types of milk.

nutrient	100 cm^3 of human milk	100 cm^3 of cows' milk	100 cm^3 of milk made from baby-milk powder
carbohydrate (g)	7.4	5.0	7.2
fat (g)	4.2	3.7	3.6
protein (g)	1.1	3.5	1.5
calcium (mg)	35.0	120.0	49.0
iron (mg)	0.075	0.05	0.9
vitamin C (mg)	3.8	1.5	6.9

(a) A scientist compared the three types of milk.

Why was it a fair comparison?

.....

..... [1]

(b) Both human milk and milk made from baby-milk powder contain more sugar than cows' milk.

Which data in the table supports this?

..... [1]

(d) (i) Baby-milk powder is made from cows' milk.

What evidence is there in the table that iron is added when making baby-milk powder?

.....

..... [1]

(ii) Why do we need iron in our diet?

..... [1]

(e) A pupil said, 'There is more vitamin C than protein in human milk'.

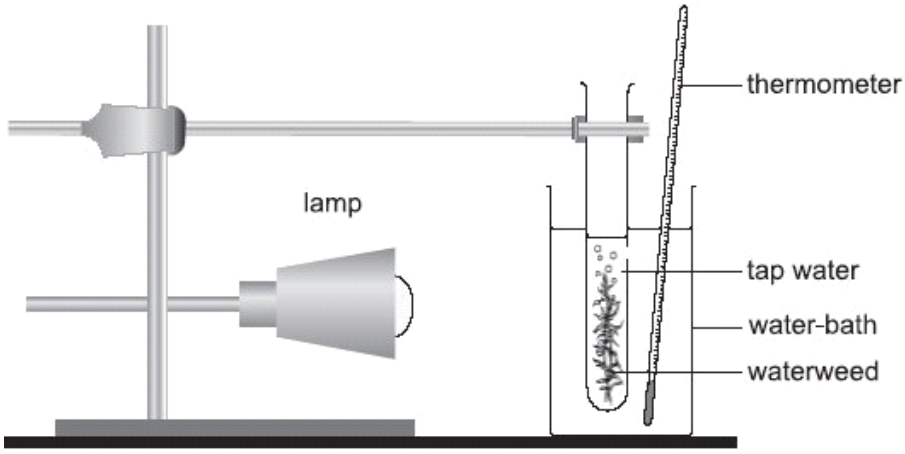
How can you tell from the table that the pupil was wrong?

.....

..... [1]

5. Suzi investigated how temperature affects the number of bubbles produced by waterweed in one minute.

She set up the experiment as shown below.



When the temperature of the water was 10°C the waterweed did **not** produce bubbles.

(a) Suzi increased the temperature of the water in the water-bath to 20°C.
The waterweed started to produce bubbles.
She waited two minutes before starting to count the bubbles.

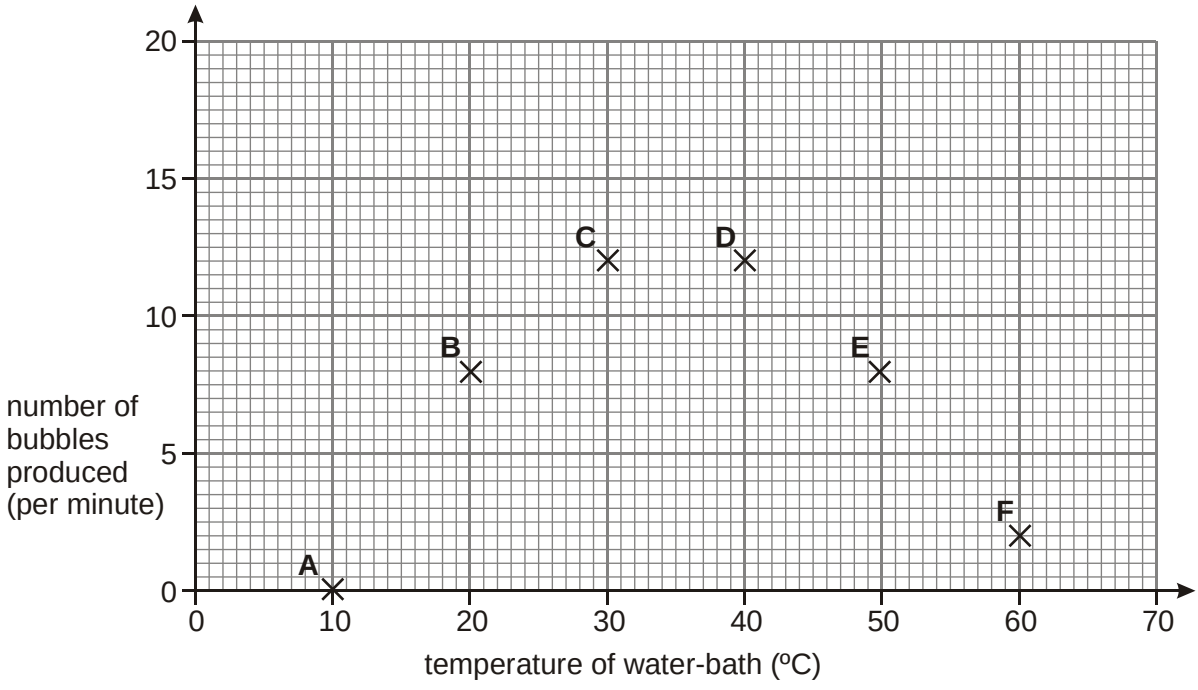
Explain why she waited for two minutes before she started to count the bubbles.

.....

..... [1]

(b) Suzi counted the number of bubbles produced at six different temperatures.

Her results are shown on the graph below.



(i) Draw a smooth curve on the graph. [1]

(ii) Use your curve to find the temperature of water which produced the most bubbles per minute.

.....°C [1]

(c) Suzi predicted that the higher the temperature the more bubbles would be produced.

Which points on the graph support Suzi's prediction?

..... [1]

(d) Suzi's data does **not** show clearly the exact temperature at which most bubbles were produced.

How could she improve the data she collects to find this temperature?

.....

..... [1]