

Heidi alet

10/15

This question is about biological molecules.

Choose words or phrases from the list to complete the sentences.

Each word or phrase may be used once, more than once, or not at all.

- |           |              |                |              |
|-----------|--------------|----------------|--------------|
| calcium   | carbon       | carbon dioxide | carbohydrate |
| cellulose | chloroplasts | fat            | glycerol     |
| glycogen  | iron         | methane        | nitrogen     |
| oxygen    | protein      | starch         |              |

Fats are composed of the elements carbon, hydrogen and oxygen only. All proteins contain these three elements and the element nitrogen.

Glucose is a type of carbohydrate.

Animals store excess glucose as fat glycogen in the liver.

Plants store excess glucose as starch. Plants also convert glucose to cellulose which is used to make cell walls.

6

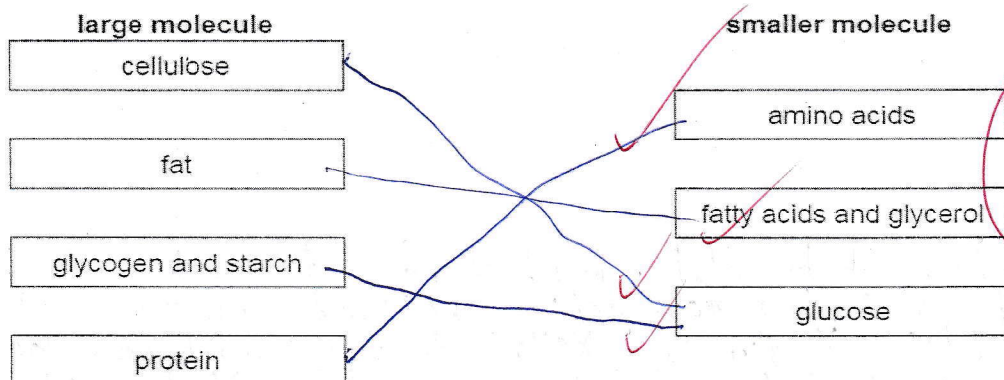
[7]

Proteins are large molecules.

The boxes on the left show the names of some large molecules.

The boxes on the right show the smaller molecules they are made from.

Draw four lines to match the large molecule with the smaller molecule it is made from.



4

[4]

Dialysis tubing is an artificial membrane, which is similar to the lining of the intestine.

The diagram shows a U-shaped container representing a beaker. Inside the container is a liquid labeled 'water outside the dialysis tubing'. A piece of 'dialysis tubing' is partially submerged in this water. The tubing is secured at the top by a 'rubber band to secure the dialysis tubing'. The tubing is filled with a 'glucose solution'. At the bottom of the tubing, there is a 'knot at the end of the dialysis tubing' to seal it. The setup is used to demonstrate osmosis across a semi-permeable membrane.

The results are shown in the table.

time / minutes	results of the Benedict's tests on the water outside the dialysis tubing
0	blue
5	green
10	yellow
15	red

benedict tube solut benedict co fest is blue in color  
 so at 0 minutes no reaction happend (no glucose) after  
 5 minutes it turned yellow that means there's low amount  
 of glucose when its 10 minutes it turned yellow  
 that means more glucose and in 15 minutes it  
 turned to red that means it has a lot of glucose 4 marks

By heating so as time increase the results of benedict test increases (more glucose appear)

Haidor alet  
9001 B

A potometer is used to measure water uptake by a plant. Fig. 2.1 shows the stem and flower of a plant in a potometer. As water is taken up, the bubble moves in the direction shown.

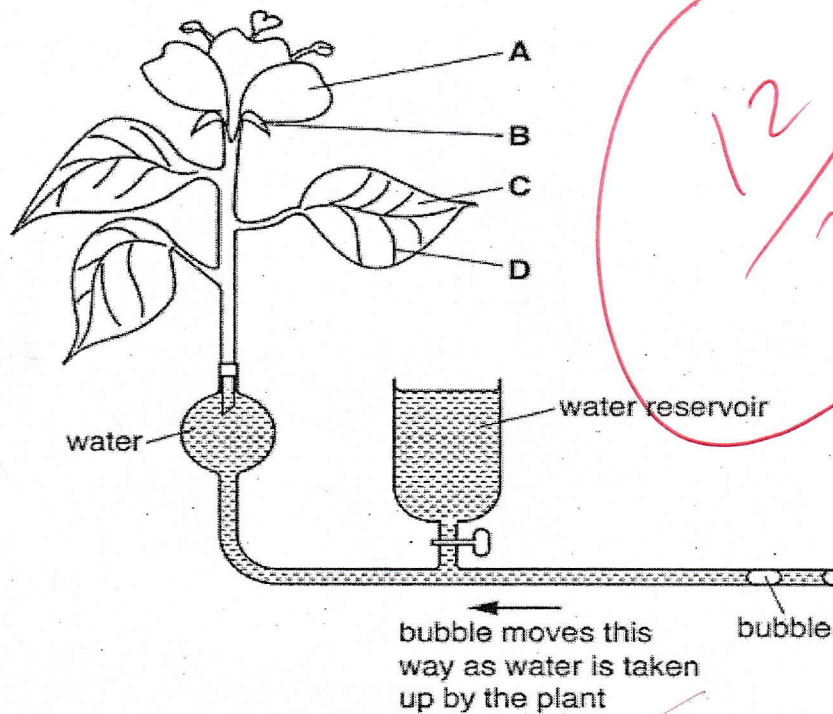


Fig. 2.1

(a) Name the parts A, B, C and D in Fig. 2.1.

- A Flower, Petal  
B Node lateral bud scale  
C Blade  
D Stem

[4]

(b) Describe the pathway taken by water as it moves from the potometer, through the plant stem and into the surrounding air.

it moves through the potometer then it moves in the stem upwards until it reaches the leaf where it diffuses out of the leaf.

[3]



- (c) (i) In an experiment, the bubble moved a distance of 60 mm in 10 minutes. Calculate the average rate at which the bubble moved in mm per min.

$$\frac{60}{10} = 6 \text{ mm/min}$$

..... mm per min  
[1]

- (ii) The experiment was repeated in an area of lower light intensity.

Predict and explain what would happen to the rate at which the bubble moved.

prediction..... it would move slower

explanation..... Because rate of photosynthesis decrease  
so less water is needed leading to  
lower rate of transpiration so water  
pulled slower

[3]

- (c) State **two** variables that the students should keep constant in this investigation.

1..... Room temperature

2..... Humidity

[2]

Petroleum jelly is greasy and waterproof.

- (d) Suggest the purpose of the petroleum jelly on the apparatus shown in Fig. 2.1.

to prevent the entry of other  
oxygen bubbles

[1]

Another student thinks that the apparatus in Fig. 2.1 does not measure water **loss** from the leaves.

Suggest why this student is correct.

because it doesn't collect the water  
vapour to measure water loss

[1]

Fig. 2.4 shows a section of a stem as seen under a light microscope.

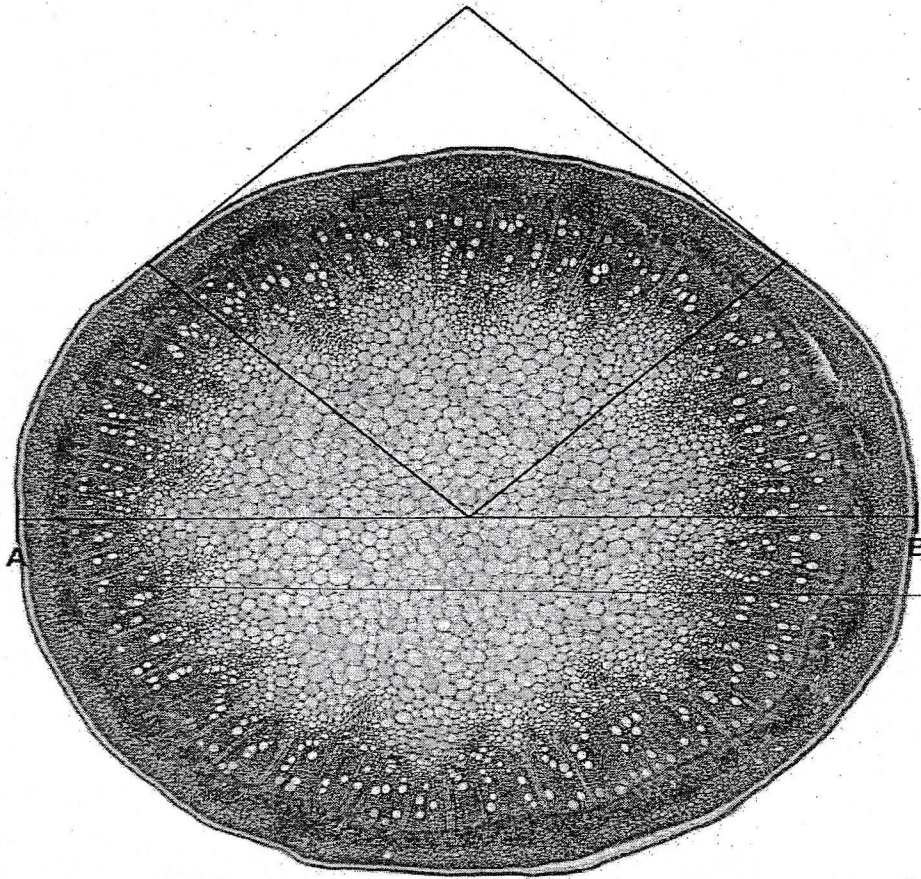


Fig. 2.4

The actual diameter of the stem is 7.5 mm.

The magnification of Fig. 2.4 can be calculated using the following equation:

$$\text{magnification} = \frac{\text{length of AB}}{\text{actual diameter of stem}}$$

Calculate the magnification of Fig. 2.4 using the information above and your answer to (i).

Show your working.

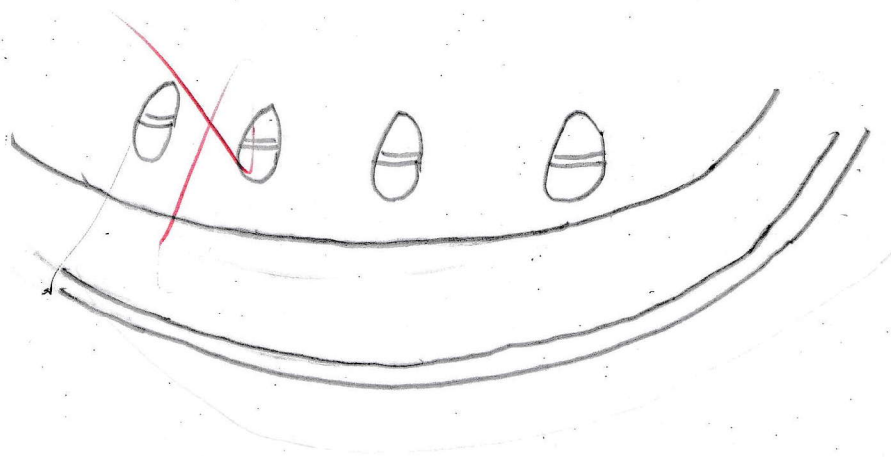
Give your answer to the nearest whole number.



$$11.9 \text{ cm} = 11900$$

$$= \frac{11900}{7.5} = 1586.6\bar{6} \times$$

magnification ..... [1]



Make a large drawing of the section of the stem contained in the square on Fig. 2.4 to show the different structures and layers.  
Do not draw any individual cells.