

**Q1.** The table shows the percentage of some gases in the air a boy breathed in and out.

Gases	Air breathed in	Air breathed out
carbon dioxide	0.04%	4.0%
oxygen	20.0%	16.0%
water vapour	1.0%	6.0%

(a) What happens in the lungs to change the levels of oxygen and carbon dioxide in this way?

Oxygen .....

.....

.....

Carbon dioxide .....

.....

.....

(4)

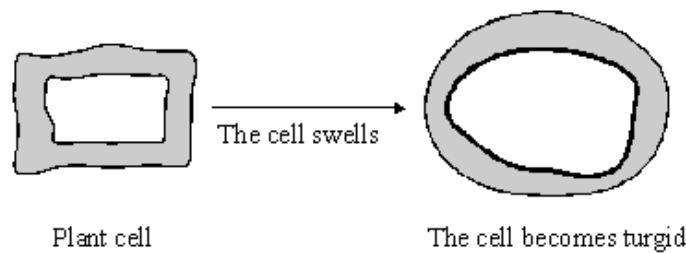
(b) Compare the percentage of water vapour in the air breathed out with the percentage in air breathed in.

.....

(2)

(Total 6 marks)

**Q2.** (a) The diagrams show what happens to the shape of a plant cell placed in distilled water.



(i) Explain why the cell swells and becomes turgid. Name the process involved.

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.....

.....

(2)

(ii) Give **one** feature of the cell wall which allows the cell to become turgid.

.....

(1)

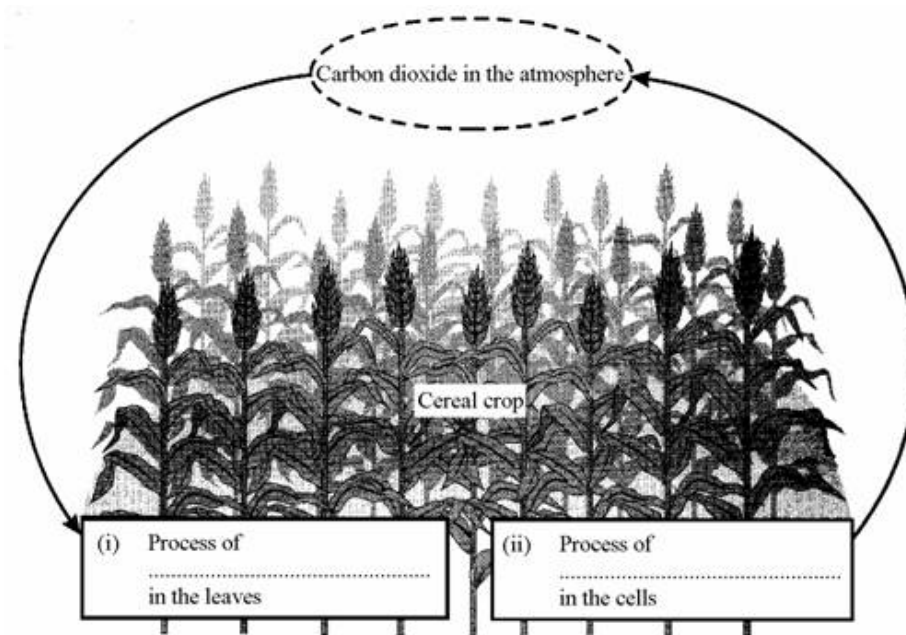
(b) Describe the change which will occur if a piece of peeled potato is placed in a concentrated sugar solution and explain why this change occurs.

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

(3)  
(Total 6 marks)

**Q3.** (a) The diagram shows a cereal crop.

Complete spaces (i) and (ii).



(2)

(iii) What sort of weather may cause the cereal crop to wilt?

.....

(1)

(b) Describe the process of transpiration in plants.

.....

.....

.....

.....

.....

.....

(3)  
(Total 6 marks)

##

- (a) oxygen passes from the air/lungs into the body  
*gains 1 mark*

**but**

oxygen passes from the air/lungs into the blood  
*gains 2 marks*

carbon dioxide passes from the body into the air/lungs  
*gains 1 mark*

**but**

carbon dioxide passes from the blood into the air/lungs  
*gains 2 marks*

4

- (b) increased/5% more  
*gains 1 mark*

**but**

6 times more (in air breathed out)  
*gains 2 marks*

2

[6]

- M2.** (a) (i) water (molecules) enter(s) (the cell)  
*or water (molecules) pass(es) through the (semi-permeable) cell membrane*

1

by osmosis

*or because the concentration of water is greater outside (the cell than inside it the vacuole)*

*accept because of the concentration gradient provided there is no contradiction*

1

- (ii) any **one** from

(it is) elastic

(it is) strong

(it is fully) permeable (to water)

*or water can pass through it*

*do not credit semi-permeable*

*do not credit cell membrane is semi-permeable*

1

- (b) (the piece of) potato shrinks  
*or loses its turgor*  
*or becomes flabby*  
*or becomes flaccid*  
*or plasmolysis occur*  
*or cytoplasm pulls away from the cell wall*
- (because) concentration of sugar  
*or because concentration of water* 1
- (solution) is greater than concentration inside the cell / vacuole  
*inside the cell / vacuole is greater than concentration (of water)*  
*outside* 1
- water is drawn out of the cell 1

[6]

- M3.** (a) (i) photosynthesis 1
- (ii) respiration  
*do not credit combustion*  
*do not credit decay* 1
- (iii) dry  
*accept hot or windy or drought* 1
- (b) any **three** from
- \* evaporation (of water)  
*or loss of water vapour*
- \* (mostly) from the leaf / leaves  
*do not credit incorrect reference to leaves*
- \* through the stomata  
*accept through each stoma*  
*accept through the stomas(sic)*

\* causing a pull

*or causing an increase in osmotic potential (at the top of the plant)*  
*or causing an increase in water potential (at the top of the plant) or*  
*causing a decrease in osmotic pressure (at the top of the plant)*

\* (so that) water moves up (through the plant)

*do not credit water vapour moves up through the plant*

\* as the transpiration stream

\* water enters through roots (and goes up plants)

3

[6]

