

**AQA, OCR, Edexcel**

# GCSE Science

## GCSE Biology

### Osmosis Answers

Name:

**M M E**

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Total Marks: /23

Q1: Define Osmosis.

A= 1 mark for - Water

1 mark for- Net movement from high to low concentration

1 mark for- Through a partially permeable membrane / selectively permeable

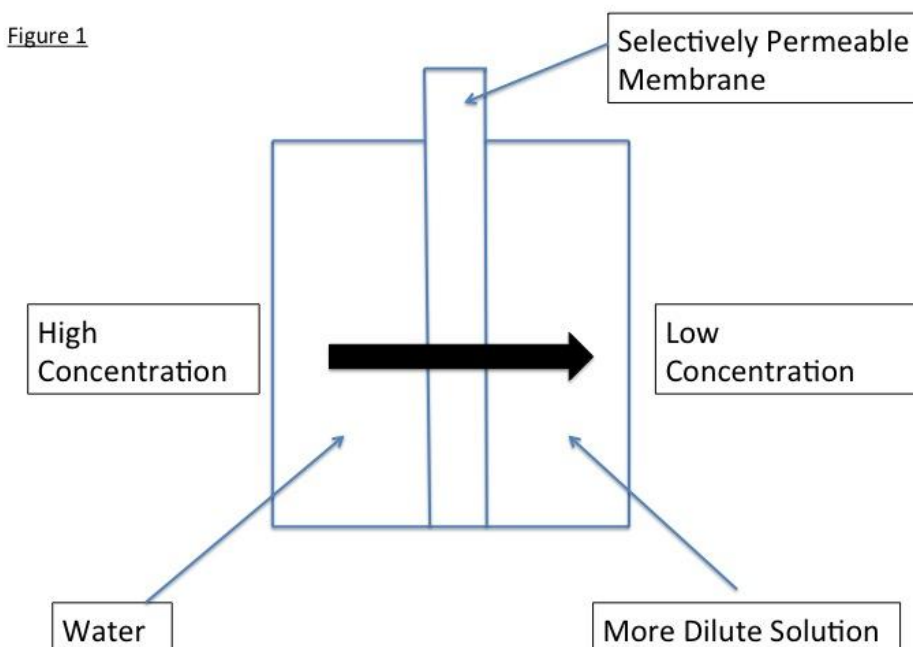
(2 marks)

Q2: What sorts of membrane does osmosis occur through?

A= Semi Permeable Membrane

(1 mark)

Q3: i) The diagram below shows an experiment using osmosis. Label the concentrations, High and Low and draw an arrow to show how the water moves.



A= 1 mark for correct direction of arrow

2 marks for concentrations in correct place

ii) Explain what will happen to the movement of molecules once equilibrium is reached.

A= 1 mark for each point

- Will move in both directions
- Equal movement of molecules/ even distribution / no net movement

(2 marks)

iii) What is created when there is a high concentration and a low concentration?

A= Concentration Gradient

(1 mark)

Q4: How do plants use osmosis?

A= Take up water

(1 mark)

Q5: Calculate the percentage gain in mass seen in figure 2.

A= 1 mark for showing working –  $6.7/35.6 \times 100$

1 mark for correct answer

$$\% \text{ Change} = \underline{18.8\%}$$

(2 marks)

Q6: Students have designed an experiment to show osmosis in plants. Two potato chips are placed in beakers of water. Beaker A contains just water and beaker B contains water and a high concentration of sugar.

Using your knowledge of osmosis, what would the students expect to happen?

A= Should contain the following and be in continuous prose.

- Beaker A - Water moves into the chip/ chip gets bigger
- Beaker B – Water moves out of the chip/ chip gets smaller
- Description of osmosis / use of partially permeable membrane

(3 marks)

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Q7: A student is measuring the rate of water loss of a tomato plant using a potometer.

By measuring the movement of the bubble the volume of water lost can be calculated. The experiment showed the bubble move by 21cm in 30 minutes. Calculate the rate of water loss in  $\text{mm}^3/\text{s}$ .

A= 1 mark for working –  $21000\text{mm}^3 \div 1800 \text{ seconds} = 11.67\text{mm}^3/\text{s}$

1 mark for correct answer = 11.67

1 mark for units –  $\text{mm}^3/\text{s}$

Rate of water loss =  $11.67\text{mm}^3/\text{s}$

Q8: What happens to an animal cell if too much water enters a cell via osmosis?

A= Swell and burst

(1 mark)

Q9: What allows plant cells to keep their shape when water is lost from the cell?

A= Cell Wall

(1 mark)

Q10: Cell A and cell B have been exposed to different conditions. One has taken up water the other has taken up a strong sugar solution.

i) Which condition has cell A been exposed to?

A= Strong sugar solution

(1 mark)

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ii) What has happened to cell A?

A= Plasmolysed

(1 mark)