

**BIOLOGY**  
Worksheet

**LW12 - OSMOSIS & WATER POTENTIAL**

**Q1)** Osmosis is often referred to as the diffusion of water.

a) Define osmosis.

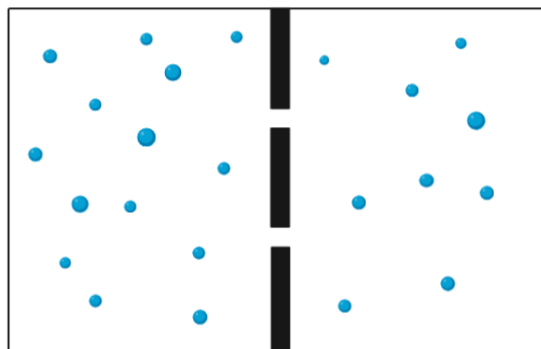
[1 mark]

b) Osmosis is described as a passive process.

Explain what this means.

[1 mark]

c) Draw an arrow on the diagram below to show which way will the water molecules move:



[1 mark]

**Q2)** The movement of water via osmosis is determined by the differences in water potential between solutions.

a) What is the definition of water potential?

[2 marks]

b) Determine which of the following statements is true or false:

A The water potential of pure water is 0kPa

**TRUE FALSE**

B Pressure potential is usually negative

C A solution with a high-water potential will have more solutes dissolved

D Solute potential is generally negative

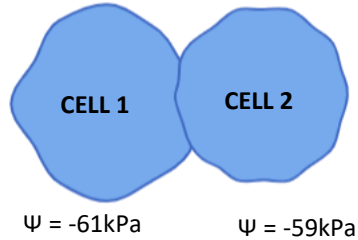
c) Explain what solute potential is?

[4 marks]

[1 mark]

**Q3)** The diagram below shows two cells with different water potentials:

**a)** Draw an arrow on the diagram to show the movement of water molecules between these cells:



[1 mark]

**b)** Using your answer from a) explain why the net movement of water molecules will move this way?

[2 marks]

**c)** What equation is used to determine the water potential of a solution?

[1 mark]

**Q4)** A solution surrounded a cell caused the cell to undergo plasmolysis.

**a)** Which type of solution was the cell exposed to and explain why this happened?

[4 marks]

**b)** Explain the net movement of molecules in an isotonic solution.

[2 marks]

**c)** Which of the following statements is correct?

**A** Salts normally cause a solution to have a lower water potential

**B** A hypotonic solution is solution of lower water potential

**C** Salts normally cause a solution to have a higher water potential

**D** A hypertonic solution is a solution of higher water potential

[1 mark]

[TOTAL 21 MARKS]