

3.2 Osmosis

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS solution 溶液 • osmosis 渗透 • water potential 水势 • turgid 膨胀 • flaccid 松软

Objective

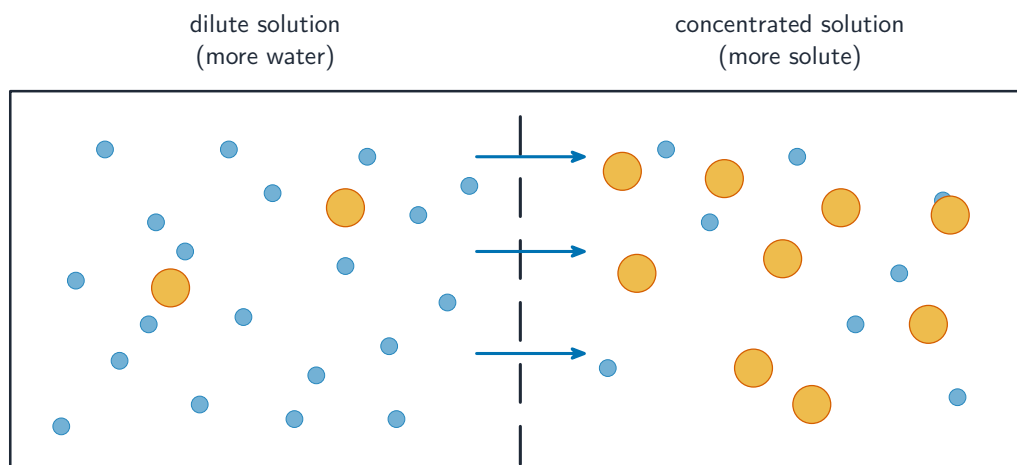
Build the skills to answer exam questions on **osmosis** 渗透 — the definition, **water potential** 水势, and the effect on plant cells (**turgid** 膨胀, **flaccid** 松软, **plasmolysed** 质壁分离).

You must be able to:

- define osmosis (net water movement across a partially permeable membrane)
- describe what happens to plant cells in dilute and concentrated solutions
- interpret a potato/dialysis-tubing experiment

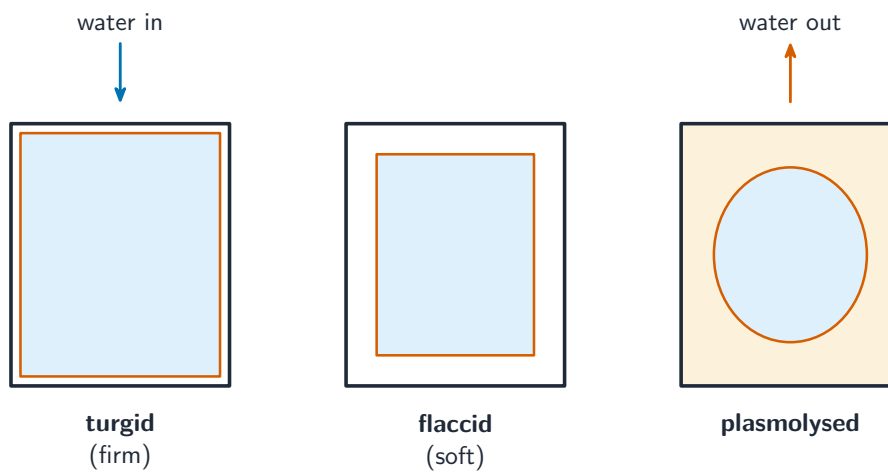
1 Worked examples

■ Osmosis and plant cells



water moves by osmosis to the concentrated side; solute is too big to cross

Osmosis: net movement of water from higher to lower water potential, through a partially permeable membrane



Dilute solution → water in → turgid; concentrated → water out → flaccid/plasmolysed

- potato in water → gains mass; in concentrated solution → loses mass.

2 Practice

2.1 Define osmosis.

[2]

2.2 State what happens to a plant cell placed in pure water.

[1]

3 Exam-style questions

3.1 A plant cell in a concentrated sugar solution becomes: [1]

- **A** turgid
 - **B** flaccid (loses water)
 - **C** larger
 - **D** unchanged
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3.2 Potato cylinders are placed in different sugar solutions and their mass measured.

(a) State what happens to the mass of a cylinder in pure water, and why. [2]

(b) State what you would observe for a cylinder in a very concentrated solution. [1]

3.3 Explain why turgid cells help support a plant. [2]

Solutions

2.1 the net movement of water molecules from a region of higher water potential to a region of lower water potential, through a partially permeable membrane.

2.2 water moves in by osmosis and the cell becomes turgid (firm).

3.1 B. In a concentrated solution water leaves the cell, so it becomes flaccid.

3.2 (a) the mass increases; because water moves into the cells by osmosis.

(b) it loses mass / becomes shorter and floppy.

3.3 water inside makes the cells turgid and press out on the cell walls; this firmness holds the plant up straight.