

3.1 Diffusion

Name: _____ Class: _____ Date: _____ **Total: 9 marks**

KEY WORDS diffusion 扩散 • concentration 浓度 • ions 离子 • temperature 温度
• particles 粒子

Objective

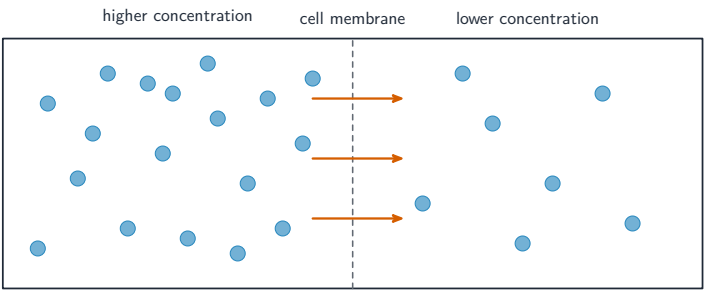
Build the skills to answer exam questions on **diffusion** 扩散 — the definition, why no energy is needed, and the factors affecting its rate.

You must be able to:

- define diffusion (net movement down a concentration gradient)
- state where the energy comes from
- give the factors that affect the rate of diffusion

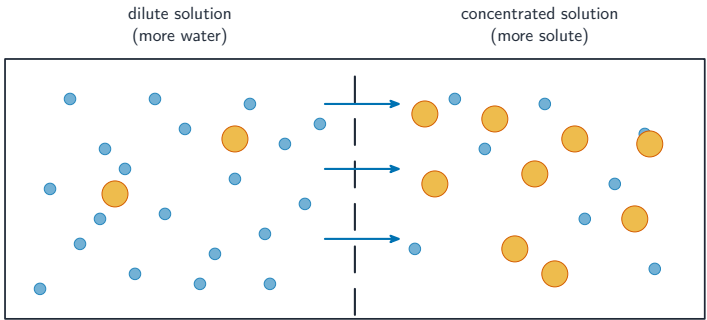
1 Worked examples

■ Diffusion



net movement of particles down the concentration gradient

Diffusion: net movement of particles from higher to lower concentration (down the gradient)



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

Osmosis is the diffusion of water across a membrane

- **no extra energy** — uses the particles' own random (kinetic) movement.
- **faster when:** larger surface area, higher temperature, steeper gradient, shorter distance.
- e.g. O₂ diffuses into cells, CO₂ diffuses out.

2 Practice

2.1 Define diffusion. [2]

2.2 State where the energy for diffusion comes from. [1]

3 Exam-style questions

3.1 Diffusion is faster when the temperature is: [1]

A	B
C	D

- A lower
- B higher
- C at freezing point
- D it has no effect

3.2 Oxygen moves from the air in the alveoli into the blood.

(a) Name the process. [1]

(b) State two factors that would increase the rate of this movement. [2]

3.3 Explain why diffusion does not require energy from respiration. [2]
