

Solutions

Each answer shows the steps, then the **result**.

2.1

- homeostasis is **keeping a constant internal environment**

2.2

- the hormone that lowers blood glucose is **insulin**

2.3

- a change away from the set point is **detected**
- the response **reverses** it and restores the set point

2.4

- **glucagon**
- the liver converts stored **glycogen back into glucose**

2.5

- more ADH makes kidney tubules **more permeable to water**
- more water is reabsorbed, so a **smaller volume of more concentrated urine** is produced

3.1 B

- when too hot, vessels **widen (vasodilation)** to lose more heat
- A is when too cold; C and D are false

3.2

(a)

- the pancreas releases **insulin**
- the liver stores glucose as **glycogen**
- blood glucose **falls back to normal**

(b)

- Type 1 diabetes: the pancreas **cannot make insulin**

3.3

- sweat **evaporates** from the skin
- evaporation **takes heat** from the body

3.4

(a)

- any **two** of: more **sweat** evaporates and takes heat / **vasodilation** sends more blood to the surface / **hairs lie flat** so heat escapes

(b)

- water lost in sweat makes the blood **more concentrated**
- the pituitary releases more **ADH**
- ADH makes tubules **more permeable**
- more water is reabsorbed, so **less urine**

(c)

- the **pancreas** detects the rise
- it releases **insulin**
- the liver converts glucose into **glycogen**
- cells take up more glucose, so the level **falls back**

(d)

- a change away from the norm is **detected**
- the response acts in the **opposite** direction and restores the norm