

Solutions

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

2.1

- the two main wastes are **carbon dioxide** and **urea**

2.2

- **kidney** → **ureter** → **bladder** → **urethra**

2.3

- insulin is released by the **pancreas**
- it makes the liver convert glucose into **glycogen** for storage

2.4

- sweat is released onto the skin
- water **evaporates**, taking energy from the skin and **cooling** the body

2.5

- a change away from the norm is **detected**
- the response **reverses** it and returns the level to the norm

3.1 B

- urea is made in the **liver**
- A filters it; C stores urine; D removes CO₂

3.2

(a)

- **filtration** and **reabsorption**

(b)

- all the **glucose**
- some **ions** and most of the **water**

3.3

- urea is **toxic** if it builds up in the blood

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)

- muscles **contract and relax rapidly**

- this increases **respiration**, which **releases heat**

(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)

- **glucagon**
- the liver converts **glycogen back to glucose**

(e)

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