

Solutions

2.1

- ICF 28 L, ECF 14 L (plasma 3, interstitial 11) ✓.

2.2

- The set point; dilute plasma with inappropriately concentrated urine.

2.3

- Capillaries leak protein-poor fluid: most ECF sits outside the vessels.

3.1

- Isotonic saline is ECF-isotonic: it stays entirely extracellular (2 L ECF gain).
- Plasma gain $\approx 3/14 \times 2 \approx 0.43$ L ✓ (its ECF share).
- Pure water distributes by osmolality: ~ 1.33 L intracellular; plasma gains $3/42 \times 2 \approx 0.14$ L.

3.2

- The set point (osmostat reset low).
- The sensor, integrator and effector all work: the loop defends its (wrong) target perfectly.
- Hyponatraemia: retained water dilutes ECF sodium – the water, not the salt, is the problem.