*This is the **Higher Combined** version — includes Higher Tier content. Some Separate-only details are omitted.*

The kidneys filter blood and regulate water, ion and urea concentrations — essential for maintaining the internal environment.

★ **HT** Ultrafiltration: blood filtered at high pressure in glomerulus → water, glucose, urea, ions enter Bowman's capsule

★ **HT** Selective reabsorption: ALL glucose reabsorbed (active transport); most water reabsorbed; some ions reabsorbed

★ **HT** Urine: remaining water, urea, excess ions → ureter → bladder → urethra

★ **HT** ADH (antidiuretic hormone): released when blood water low → kidney reabsorbs more water → concentrated urine

• Dialysis: filters blood through partially permeable membrane — for kidney failure patients

• Kidney transplant: permanent solution but requires matched donor, lifelong immunosuppressants

Key Terms

Ultrafiltration	High-pressure filtration of blood in the glomerulus
ADH	Antidiuretic hormone — makes kidney more permeable to water — concentrates urine
Dialysis	Artificial kidney — filters blood through membrane

■ **Exam Tip:** ADH works by negative feedback: dehydrated → more ADH → more water reabsorbed → less concentrated blood → less ADH. Know the full feedback loop.