

**Marks**

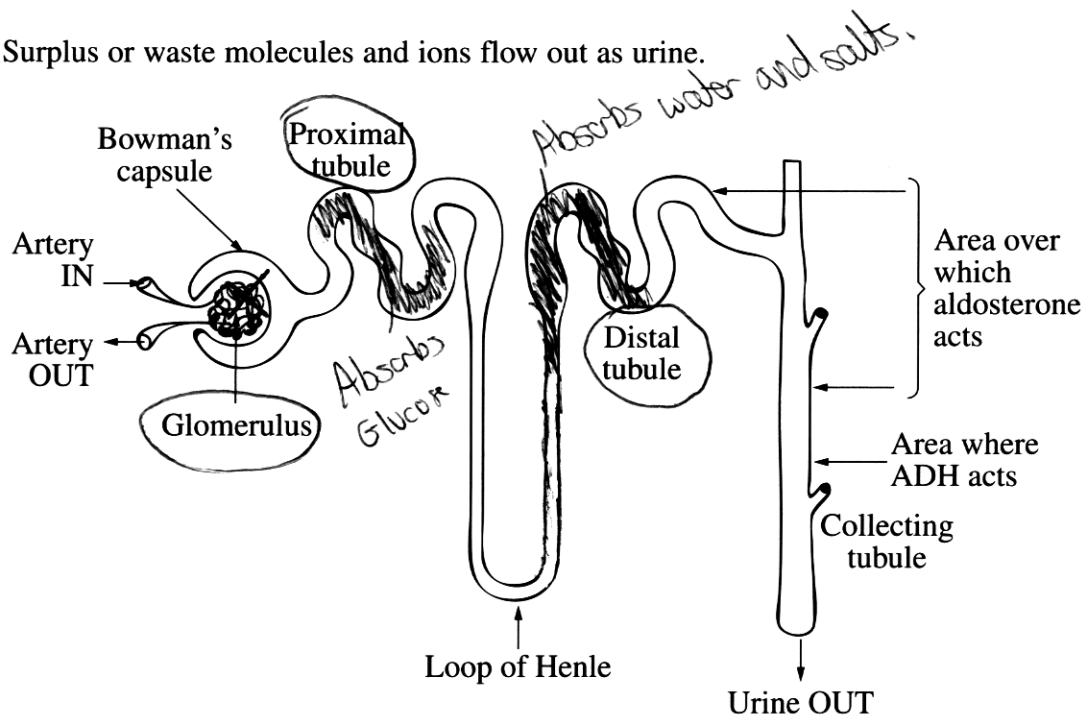
**Question 23** (6 marks)

The diagram represents a nephron which is the functional unit of the kidney.

Nephrons make urine by:

- filtering small molecules and ions from the blood;
- reabsorbing the needed amounts of useful materials.

Surplus or waste molecules and ions flow out as urine.



- (a) Identify the area where filtration occurs, by marking it with an X on the diagram. **1**
- (b) Identify the area where reabsorption occurs, by shading it on the diagram. **1**
- (c) Discuss the importance of hormone replacement therapy for people who cannot secrete aldosterone. **4**

Aldosterone controls both the sodium content of blood and blood pressure and is thus extremely important. If sodium levels are low, aldosterone stimulates the reabsorption of sodium by active transport and water follows by osmosis, increasing blood volume and thus blood pressure. People without the ability to produce aldosterone would suffer from low sodium levels and low blood pressure, meaning the movement of blood around the body would be slowed (ie. nutrients not distributed to cells fast enough, waste not removed quickly), having adverse effects, making hormone replacement therapy - 18 is extremely important.