Marks

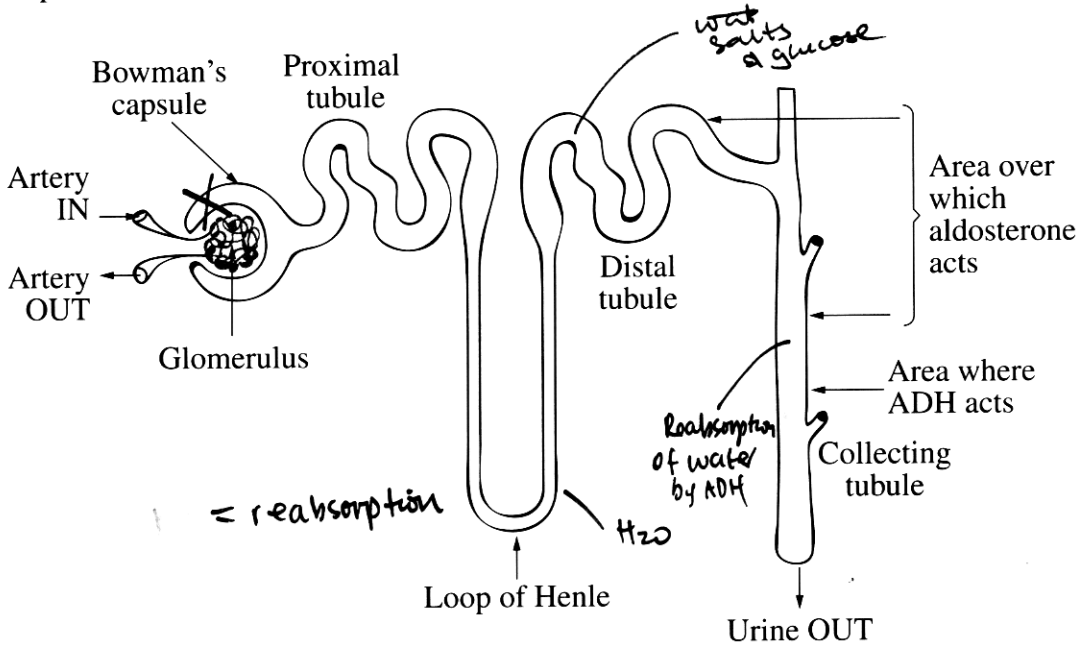
Question 23 (6 marks)

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 is a hormone produced in the Adrenal cortex which ~~over~~ controls in regulation of water & salt balance in body. It has sodium retaining effects. When people can't excrete aldosterone, they cannot retain sodium back into the blood, and ~~therefore no wat~~ water cannot follow by osmosis. low levels of sodium & water levels cause a decrease in blood volume, leading to dangerously low blood pressure. Also, the person will develop hyperlaekemia as a result of ~~to~~ increase in reabsorption potassium ions. All this is has fatal consequences for the peson, (ie dizziness, fatigue). People ~~with~~ who cannot secret aldosterone (ie ppl w/addison's disease, cancer of adrenal cortex and drugs) have to be given drugs such as fludrocortisone, which is a synthetic hormone w/ sodium retaining effects. Otherwise the results would be fatal.