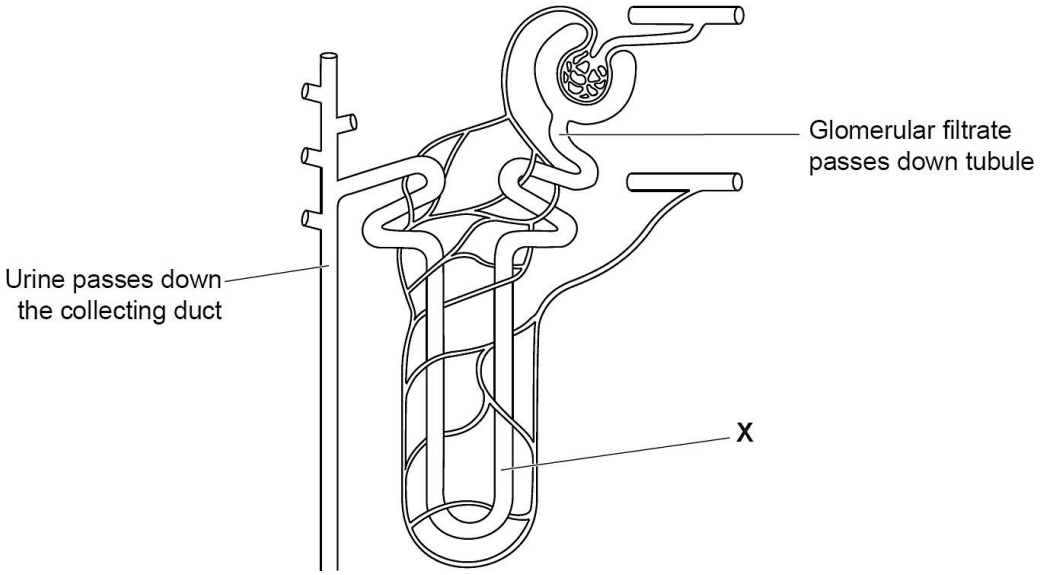
GCSE Biology A (Gateway)

J247/03 B1-B3 and B7 Higher (Higher Tier)

Question Set 10

1 The diagram shows a kidney tubule (nephron).



(a) **(i)** What is the name of part **X**?

Loop of Henle

[1]

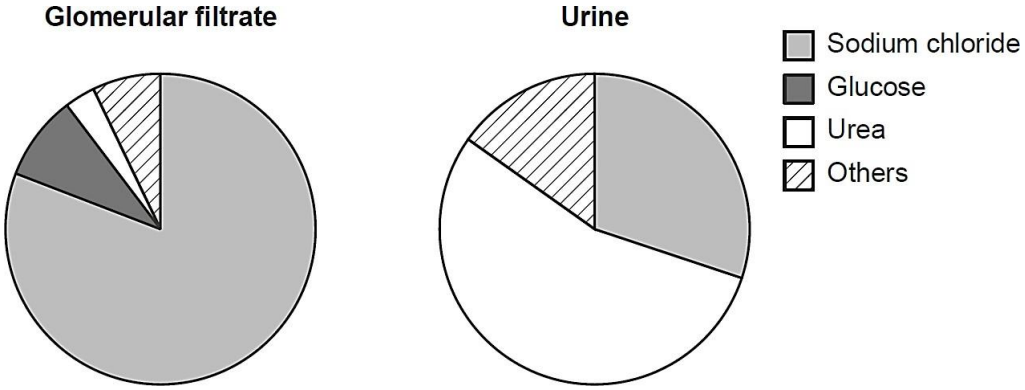
(i) The hormone ADH affects the permeability of part of the kidney tubule.

Name the part of the tubule affected by ADH.

collecting duct

[1]

(b) The diagram shows the composition of glomerular filtrate and urine.



What evidence is there to suggest that selective reabsorption occurs in the kidney tubule?

Use evidence from the diagram to support your answer.

Glucose in filtrate but not in urine so must be absorbed.
Sodium chloride lower in urine so reabsorbed.
Urea much higher in urine so not reabsorbed.
waste products higher in urine so not absorbed but useful substances reabsorbed.

[4]

(c)* Sports drinks are usually one of three types. Look at the table of information on these types of sports drink.

Sports drink	Concentration of solutes relative tobody fluids	Mass of carbohydrates (g)(mainly sugars)	Order of how quickly the drinkis absorbed
Hypotonic	Less	<4	1
Isotonic	Same	4 – 8	2
Hypertonic	More	>8	3

An athlete is going to run a 10000 meter race. About an hour before the race the athlete drinks a hypertonic sports drink.

The athlete completes the 10000 meter race. After the race the athlete drinks an isotonic sports drink.

Explain how the race causes changes in water, salt and sugar levels in the athlete's body and explain the athlete's choice and timing of drinks.

The athelete drinks the hypertonic drink before the race because during the race the athelete will lose lots of water, salts and sugars. This is due to sweating and respiration. So he needs the drink with the highest level of sugar. Hypertonic is best for this as contains highest level of sugars and absorbs slowly so its effects will last the whole race. However after the race, he takes the isotonic drink to replace salts lost in sweat. This is the the best drink post-race as it will keep the concentration of the blood constant. **[6]**

Total Marks for Question Set 10: 12