

Water control

1. Waste products, such as carbon dioxide and urea, have to be removed from the body.

Draw a ring around the correct answer to complete each sentence.

- (a) Carbon dioxide is produced by

breathing
diffusion
respiration

 . (1)
- (b) Most carbon dioxide leaves the body through the

kidneys
lungs
skin

 . (1)
- (c) Urea is produced in the

kidneys
liver
lungs

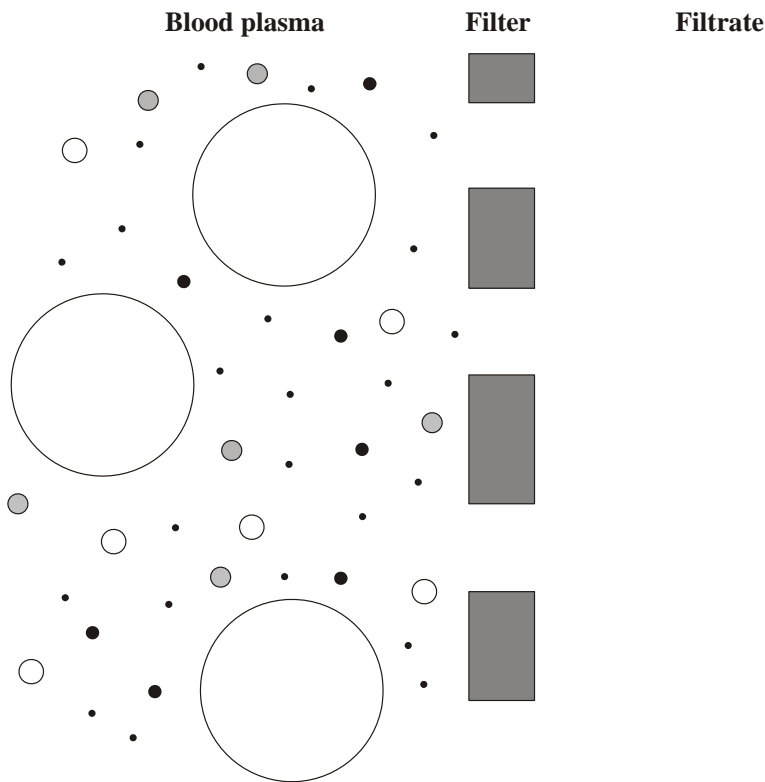
 . (1)
- (d) Urea is produced from the breakdown of

amino acids
glucose
urine

 . (1)
- (Total 4 marks)**

2. The kidneys filter the blood.

The diagram shows the site of filtration in the kidney.



Key

- Water molecule
- Urea molecule
- Glucose molecule
- Sodium ion

Protein molecule

(a) Use information from the diagram to answer this question.

Put a tick (✓) in the box next to every substance that will pass through the filter from the blood plasma into the filtrate.

One has been done for you.

- | | |
|-------------|-------------------------------------|
| glucose | <input checked="" type="checkbox"/> |
| urea | <input type="checkbox"/> |
| water | <input type="checkbox"/> |
| sodium ions | <input type="checkbox"/> |
| protein | <input type="checkbox"/> |

(2)

(b) Proteins and glucose are not present in the urine of a healthy person.

Unit B3, B3.3.1

- (i) Use information from the diagram to explain why protein is not found in the urine of a healthy person.

.....

(1)

- (ii) Complete the sentence by drawing a ring around the correct answer.

After filtration, all the glucose is

reabsorbed
released
respired

(1)

- (c) An athlete trained on a hot day and on a cold day. On each day, he did the same amount of exercise and drank the same volume of water.

Complete the sentences by drawing a ring around the correct answer.

(i) On the hot day, the athlete would produce

less
more
the same amount of

urine.

(1)

(ii) This is because he would produce

less
more
the same amount of

sweat.

(1)

(Total 6 marks)

3. (a) (i) Urine is made in the kidneys and stored for a few hours before being released from the body.

In which organ of the body is urine stored? Draw a circle around **one** answer.

bladder **large intestine** **liver**

(1)

- (ii) Which **two** of the following substances are **not** found in the urine of a healthy person?

Tick (✓) **two** boxes.

glucose	<input type="checkbox"/>
mineral ions	<input type="checkbox"/>
protein	<input type="checkbox"/>
urea	<input type="checkbox"/>

(2)

- (b) A person with kidney disease may be treated by dialysis or by having a kidney transplant.

Read the information about dialysis and kidney transplants.

- A person needs 3 dialysis sessions a week, each lasting about 8 hours.
- Intake of protein and salt in the food is kept low between dialysis sessions.
- For each patient, dialysis costs £30 000 per year.
- The use of a general anaesthetic can sometimes cause brain damage.
- Drugs to suppress the immune system are given after a kidney transplant.
- A transplant costs £20 000 in the first year plus £6500 in each of the following years for drugs.

Use this information to answer the questions.

- (i) Give **two** advantages of treatment by having a kidney transplant rather than treatment by dialysis.

1

.....

2

.....

(2)

- (ii) Give **one** disadvantage of treatment by having a kidney transplant.

.....

(1)

- (c) The table shows the amounts of some substances in the blood of one patient before dialysis and after dialysis.

Substance	Concentration in blood plasma in grams per dm ³	
	Before dialysis	After dialysis
Sodium ions	2.88	3.00
Potassium ions	0.22	0.14
Urea	4.50	0.30

During dialysis, substances are removed from the blood.

- (i) Which substance in the table decreased in concentration the most during dialysis?

.....

(1)

- (ii) By how much did the concentration of this substance decrease?

..... grams per dm³

(1)

(Total 8 marks)