

# Excretion in humans: practice questions

7 questions • 21 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name .....

Total ..... / 21

**1** Which organ excretes carbon dioxide? [1 mark]

- A. ☐ Kidney
- B. ☐ Liver
- C. ☐ Lung
- D. ☐ Bladder

**2** The kidneys are part of the urinary system. (a) State two substances, other than urea, that are excreted by the kidneys. [1] (b) Name the part of the urinary system that (i) stores urine, [1] (ii) carries urine out of the body. [1] (c) Name the tube that carries urine from each kidney to the bladder. [1] [4 marks]

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**3** **Supplement** [1 mark]

A kidney is cut open lengthways. Which option names the outer region and the inner region of the kidney?

- A. ☐ Outer: cortex; inner: medulla
- B. ☐ Outer: medulla; inner: cortex
- C. ☐ Outer: cortex; inner: ureter
- D. ☐ Outer: medulla; inner: ureter

**4** Supplement

[4 marks]

Outline how the nephron and its blood vessels form urine from blood.

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**5** Supplement

[4 marks]

The table shows the concentration of three substances in the blood plasma, in the fluid filtered into the nephron and in urine from a healthy person. (a) Calculate how many times greater the concentration of urea is in urine than in blood plasma. Give your answer to the nearest whole number. [2] (b) Explain why there is no glucose in the urine. [1] (c) Explain why there is no protein in the filtered fluid. [1]

| Concentration of substances / g per 100 cm <sup>3</sup> |              |                           |       |
|---------------------------------------------------------|--------------|---------------------------|-------|
| Substance                                               | Blood plasma | Filtered fluid in nephron | Urine |
| Glucose                                                 | 0.10         | 0.10                      | 0.00  |
| Protein                                                 | 7.00         | 0.00                      | 0.00  |
| Urea                                                    | 0.03         | 0.03                      | 2.00  |

Answer = .....

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The liver has two roles in the use of amino acids. (a) Describe the role of the liver in the assimilation of amino acids. [1] (b) Define deamination. [2] (c) State the organ in which urea is formed. [1]

Urea is made in the liver and removed from the body by the kidneys. (a) Explain why it is important that urea is excreted. [2] (b) State where urea comes from. [1]

# Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

C C (lung) (1)

2. [4]

- (a) excess water and excess ions (1) allow salts; both needed for the mark
- (b)(i) bladder (1)
- (b)(ii) urethra (1) reject ureter
- (c) ureter (1) reject urethra

3. [1] **Supplement**

A A (cortex outside, medulla inside) (1)

4. [4] **Supplement**

- blood is filtered in the glomerulus (1)
- water, glucose, urea and ions pass out of the blood / into the nephron (1) allow Bowman's capsule
- all of the glucose is reabsorbed (into the blood) (1)
- most of the water and some of the ions are reabsorbed (into the blood) (1)
- urine contains urea, excess water and excess ions (1)
- Max 4

5. [4] **Supplement**

- (a)  $2.00 \div 0.03$  (1)
- (a) = 67 (times) (1) the second mark needs the answer to the nearest whole number; 66.7 scores the first mark only
- (b) all the glucose is reabsorbed (back into the blood) (1)
- (c) protein molecules are too large (to be filtered) / cannot pass out of the glomerulus (1)

6. [4] **Supplement**

- (a) the liver converts amino acids to proteins (1)
- (b) removal of the nitrogen-containing part of amino acids (1) allow removal of the amino group
- (b) to form urea (1)
- (c) liver (1)

7. [3] **Supplement**

- (a) urea is toxic / poisonous (1)
- (a) so it would build up (in the blood / body) and cause harm (1) ignore urea is a waste
- (b) excess amino acids (1) allow the breakdown / deamination of amino acids