

Week 17

IGCSE Biology

Homework bundle for this week

本周作业合集

exercises.lol

Contents 目录

Topic 13 quiz	2
Exercise sheet 13.1	5
Past-paper questions 13.1	9

IGCSE Biology

Name: _____ Score: _____

1. Urea is produced from the breakdown of excess:
 - ☐ amino acids (protein)
 - ☐ glucose
 - ☐ fat
 - ☐ water
2. During ultrafiltration in the nephron, which stays in the blood?
 - ☐ blood cells and proteins
 - ☐ water
 - ☐ glucose
 - ☐ urea
3. The organs that filter the blood to make urine are the:
 - ☐ kidneys
 - ☐ lungs
 - ☐ liver
 - ☐ intestines
4. How much glucose is normally reabsorbed back into the blood?
 - ☐ all of it
 - ☐ none of it
 - ☐ half of it
 - ☐ only at night
5. Carbon dioxide is excreted by the:
 - ☐ lungs
 - ☐ kidneys
 - ☐ liver
 - ☐ skin only
6. The breakdown of excess amino acids in the liver is called _____.

7. Selective reabsorption returns useful substances from the nephron to the blood.

☐ True ☐ False

8. The tiny filtering unit of the kidney is the _____.

9. Urine is mainly made of:

☐ urea, excess water and salts

☐ glucose and protein

☐ blood cells

☐ fat

IGCSE Biology

1. amino acids (protein)

The liver makes urea from excess amino acids.

2. blood cells and proteins

Large things (cells, proteins) are not filtered out.

3. kidneys

Kidneys filter blood and form urine.

4. all of it

Glucose is useful, so all of it is reabsorbed.

5. lungs

CO₂ from respiration leaves via the lungs.

6. deamination

Deamination produces urea.

7. True

Glucose and needed water are reabsorbed.

8. nephron

Each kidney has about a million nephrons.

9. urea, excess water and salts

Useful substances are reabsorbed; waste forms urine.

13.1 Excretion in humans

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS urea 尿素 • nephron 肾单位 • amino acids 氨基酸 • liver 肝脏 • excretion 排泄

Objective

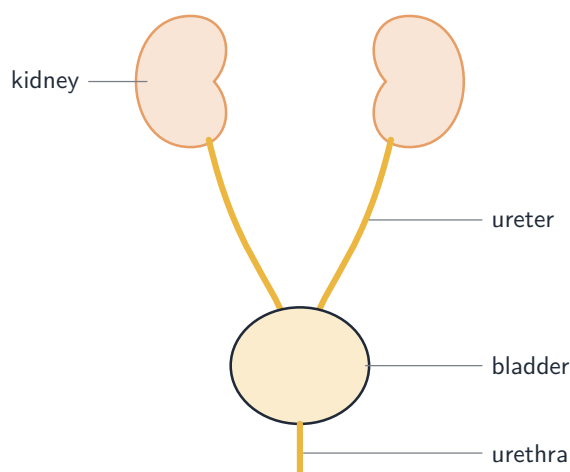
Build the skills to answer exam questions on **excretion in humans** 人体排泄 — the wastes removed, the **urinary system** 泌尿系统, the **nephron** 肾单位, and **urea** 尿素 from the liver.

You must be able to:

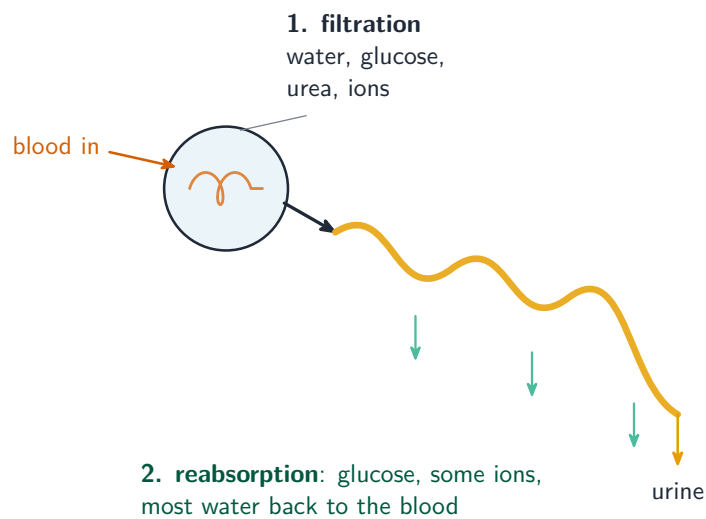
- define excretion and name the main wastes
- state the urine pathway and the role of the kidney
- describe filtration and reabsorption in a nephron; explain how urea is made

1 Worked examples

■ Kidney and nephron



Urine path: kidney → ureter → bladder → urethra



Glomerulus filters; the nephron reabsorbs all glucose, some ions and most water — what's left is urine

- **urea** is made in the **liver** from excess amino acids (deamination); it is toxic.

2 Practice

2.1 Name the two main waste products removed by excretion.

[2]

2.2 State the pathway of urine from the kidney to outside the body.

[2]

3 Exam-style questions

3.1 Urea is made in the:

[1]

- **A** kidney
- **B** liver
- **C** bladder
- **D** lungs

3.2 A nephron cleans the blood.

(a) Name the two main processes in a nephron. [2]

(b) State which substances are reabsorbed into the blood. [2]

3.3 Explain why urea must be excreted from the body. [1]

Solutions

2.1 carbon dioxide; urea.

2.2 kidney → ureter → bladder → urethra.

3.1 B. Urea is made in the liver.

3.2 (a) filtration; reabsorption.

(b) all the glucose; some ions; most of the water.

3.3 because urea is toxic (poisonous) if it builds up in the blood.

20 Which statements are correct for a healthy person?

- 1 Blood leaving a glomerulus has the same concentration of glucose as blood entering a glomerulus.
- 2 There is no glucose in the fluid leaving a nephron.
- 3 A nephron reabsorbs all of the water and some of the ions filtered out of the blood by a glomerulus.

A 1 and 3 **B** 1 only **C** 2 and 3 **D** 2 only

IGCSE Biology: **w25 22**

14 Which row names the blood vessel containing the highest blood urea concentration and the blood vessel containing the lowest blood urea concentration?

	highest blood urea concentration	lowest blood urea concentration
A	hepatic artery	hepatic vein
B	hepatic vein	renal vein
C	hepatic portal vein	renal artery
D	renal vein	hepatic portal vein

IGCSE Biology: **w25 23**

19 What shows the pathway of urea from where it is produced to where it is excreted?

- A** kidney → renal artery → heart → lungs → heart → renal vein → bladder
- B** kidney → renal vein → heart → lungs → heart → renal artery → bladder
- C** liver → hepatic artery → heart → lungs → heart → renal artery → kidney
- D** liver → hepatic vein → heart → lungs → heart → renal artery → kidney

IGCSE Biology: **s25 21**

20 What is a role of the glomerulus?

- A** assembling amino acids into proteins
- B** filtration of water, glucose, urea and ions from the blood
- C** reabsorption of glucose, ions and water back into the blood
- D** removal of the nitrogen-containing part of amino acids to form urea

23 Which organ produces urea?

- A** bladder
- B** kidney
- C** liver
- D** pancreas

21 What is filtered out of the blood in the glomerulus and into the nephron?

	glucose	urea
A	yes	yes
B	yes	no
C	no	yes
D	no	no

22 What can be broken down to form urea?

- A** amino acids
- B** fatty acids
- C** sugars
- D** vitamins

4 The kidney is an organ in the excretory system.

(a) Describe what is meant by the term excretion.

.....

.....

.....

.....

..... [2]

(b) State the name of the substance excreted by the lungs.

..... [1]

(c) Fig. 4.1 shows a simplified diagram of a cross-section of a kidney.

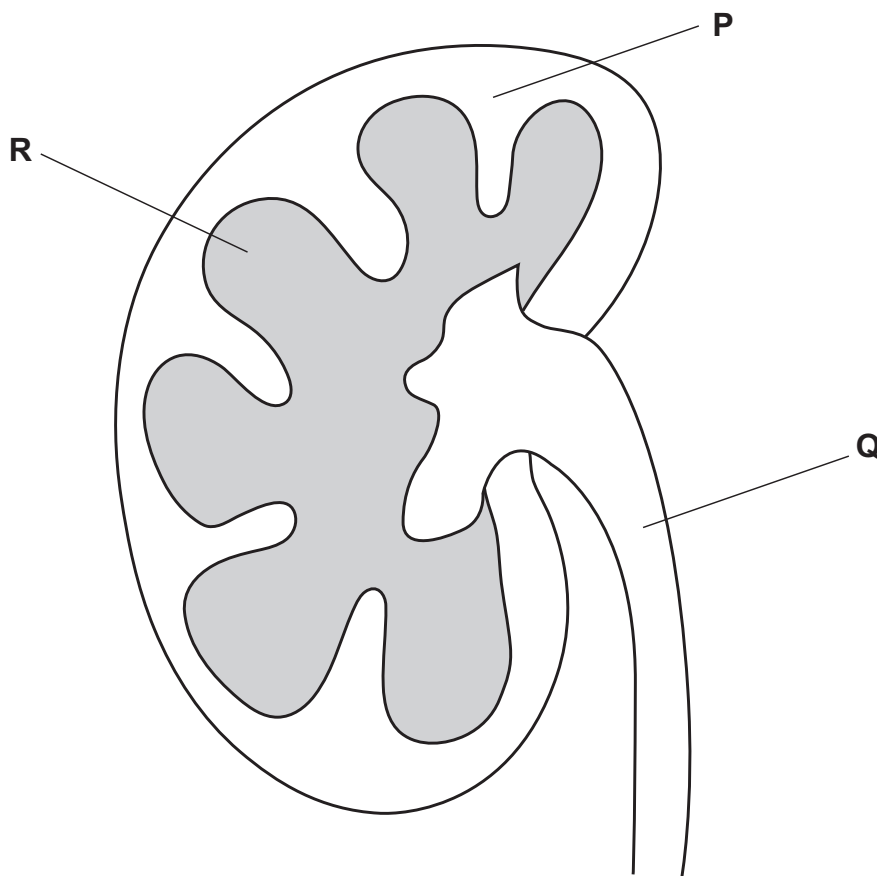


Fig. 4.1

State the names of the parts labelled **P**, **Q** and **R** in Fig. 4.1.

P

Q

R [3]

(e) The liver is also involved in excretion.

Describe **two** ways that amino acids are processed in the liver.

1

2

[2]

[Total: 14]

20 In a healthy human, in which blood vessel would you find the **lowest** concentration of urea?

- A** hepatic artery
- B** hepatic vein
- C** renal artery
- D** renal vein