CAMBRIDGE LOWER SECONDARY CHECKPOINT
PRACTISE QUESTIONS AND MARK SCHEMES

Subject: Biology Topic: Water and Life

Sub-topic Excretion-Set-1

Note:

- **Diagrams may involve additional labeling.**
- **You are requested to attempt as this will make your IGCSE journey more easy.**

1

(a) Fig. 11.1 shows the urinary system and its blood supply.

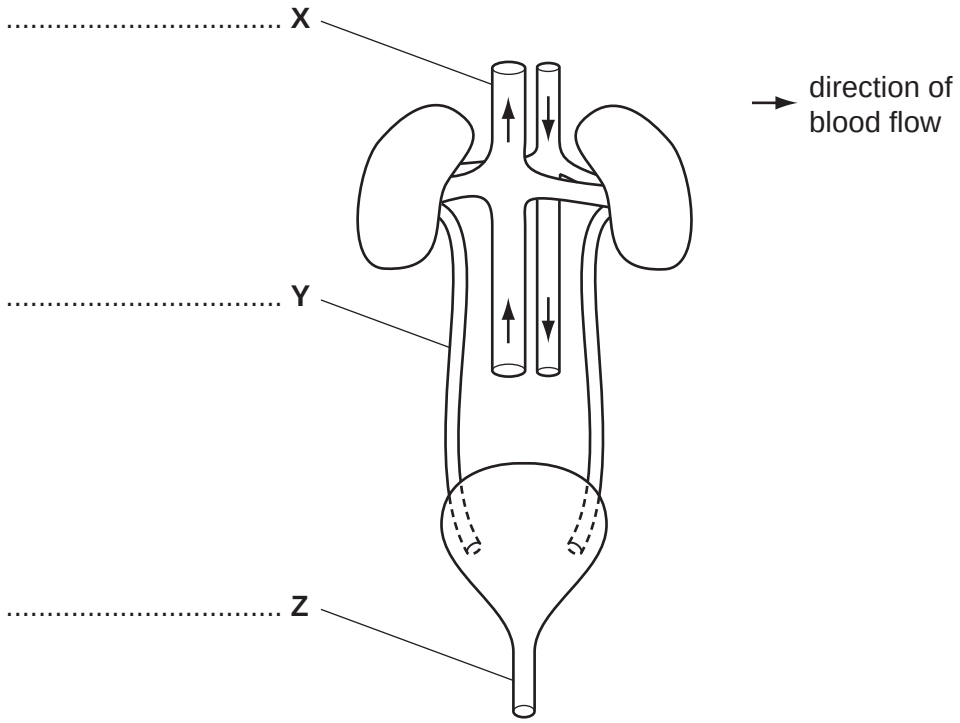

Fig. 11.1

On Fig. 11.1 label structures **X, Y** and **Z**. [3]

MARK SCHEME:

(a) X – vena cava; (beware renal vein)
Y – ureter;
Z – urethra; [3]

2 **(a)** Why do most waste products of metabolism have to be removed from the body?

.....

[1]

(b) Fig.2.1 shows the human excretory system.

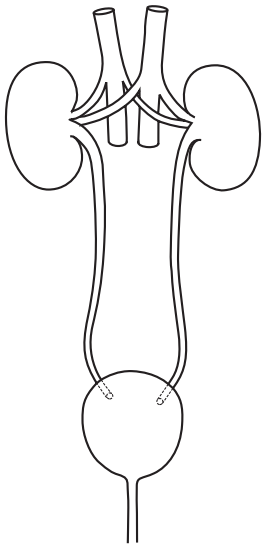

Fig. 2.1

Name the parts that fit each of the following descriptions.

(i) The tube that carries urine from the kidneys.

.....

[1]

(ii) The organ that stores urine.

.....

[1]

(iii) The blood vessel that carries blood away from the kidney.

.....

[1]

(c) Outline how the kidneys remove only waste materials from the blood.

.....

.....

.....

.....

[3]

(d) Excess amino acids cannot be stored in the body and have to be broken down.

(i) Where are excess amino acids broken down?

..... [1]

(ii) Which waste chemical is formed from the breakdown of excess amino acids?

..... [1]

[Total: 9]

MARK SCHEME:

(a) because they are toxic / poisonous; [1]
(b) (i) ureter; [1]
(ii) (urinary) bladder; [1]
(iii) renal vein; [1]
(c) 1 filter (from the blood)
2 plasma /soluble / dissolved substances / named examples;
3 reabsorption;
4 of useful substances / named example;
5 remainder becomes / forms urine;
Any three – 1 mark each [3]
(d) (i) liver; [1]
(ii) urea; [1]

Expert Solution:

(c) The kidneys filter the dissolved substances from the blood and reabsorb useful substances from it. The rest of the liquid forms the urine

[Note:

- **Sample answer has been provided inorder to enable you to understand how to answer questions looking at the Markschemes.**
- **The idea is to make you work independently .**
- **Answers for every question will not be provided, until declared on the website.**

3 **(a)** Define the term *excretion*.

.....

.....

.....

..... [2]

(b) Name **two** human excretory organs.

Identify **two** substances that each organ excretes.

organ .....

substances excreted 1 .....

2 .....

organ .....

substances excreted 1 .....

2 ..... [4]

(c) Green plants are living organisms and excrete substances.

Suggest **one** substance that plants excrete.

..... [1]

[Total: 7]

MARK SCHEME:

(a) (excretion is the) removal from an organism / body;
of toxic materials / metabolic waste / substances in excess;
[2]

(b) lungs;
carbon dioxide and water;

kidney;
urea and (mineral) salts / water;

skin / sweat gland;
water and (mineral) salts;

liver;
bile pigments and cholesterol;
[4]
One mark for organ and one mark for two excretory substances
Accept – urea

Any two pairs – 2 marks each.
(c) oxygen;
carbon dioxide;
water;
[1]

4 Fig. 3.1 shows the excretory system in a human male.

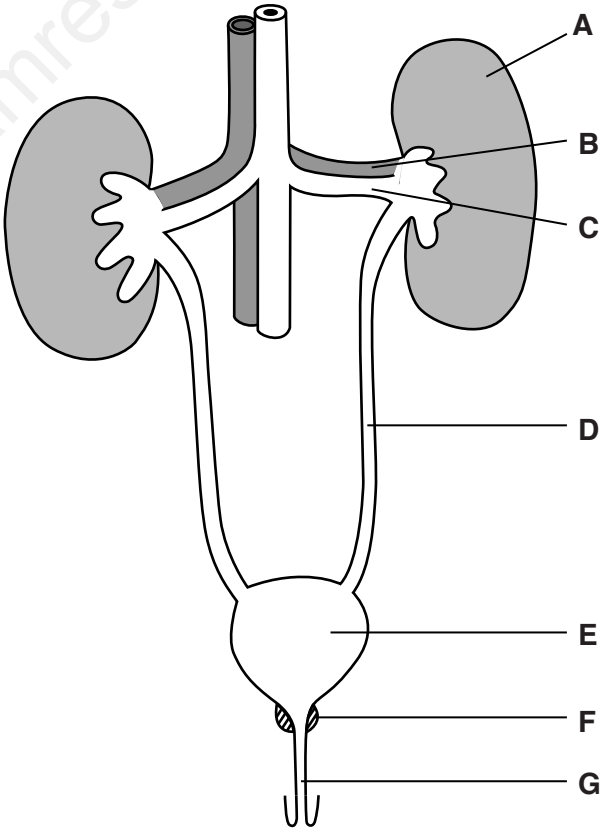

Fig. 3.1

(a) Table 3.1 shows five functions of parts of the excretory system. Complete the table by:

- naming the part that carries out each of the functions
- using the letters from Fig. 3.1 to identify the structures named.

Table 3.1

description of function	name	letter on Fig. 3.1
carries urine and sperm out of the body		**G**
filters urea and other wastes from the blood	kidney	
stores urine until it is convenient to expel it		**E**
carries blood with a high urea content	renal artery	
carries urine away from the kidney		**D**

[5]

(b) Urine contains urea.

(i) State where urea is produced in the body.

.....[1]

(ii) Name the substance which is broken down to produce urea.

.....[1]

Table 3.2 compares the amounts of four different substances in blood plasma and urine.

Table 3.2

substance	quantity / percentage per 100 cm^3 of fluid	
	blood plasma	urine
water	91.50	95.50
urea	0.03	2.10
glucose	0.10	0.00
salts	0.41	0.61

(iii) Use the information in Table 3.2 to describe how blood plasma differs from urine.

.....

.....

.....

.....

.....

.....

.....[3]

[Total: 10]

MARK SCHEME:

<table>
<tr><th>Question</th><th>Answers</th><th>Marks</th></tr>
<tr><td>(a)</td><td>
<table>
<tr><td>name</td><td>letter</td></tr>
<tr><td>urethra ;</td><td>G</td></tr>
<tr><td>kidney</td><td>A ;</td></tr>
<tr><td>bladder ;</td><td>E</td></tr>
<tr><td>renal artery</td><td>C ;</td></tr>
<tr><td>ureter ;</td><td>D</td></tr>
</table>
</td><td>[5]</td></tr>
<tr><td>(b) (i)</td><td>liver ;</td><td>[1]</td></tr>
<tr><td>(ii)</td><td>(excess) amino acids / proteins ;</td><td>[1]</td></tr>
<tr><td>(iii)</td><td>
<table>
<tr><td>blood plasma</td><td>urine</td></tr>
<tr><td>more glucose / glucose present</td><td>glucose absent ;</td></tr>
<tr><td>less urea
less salts
less water / more concentrated urine</td><td>ora ;
ora ;
ora ;</td></tr>
</table>
</td><td>max [3]</td></tr>
</table>

Note:

- **ORA means 'or reverse argument'**
- **Meaning you could also say that urine has more urea**
- **Ma 3 means 3 marks may be awarded max**

5 Fig. 8.1 shows the structures that produce urine and excrete it from the body.

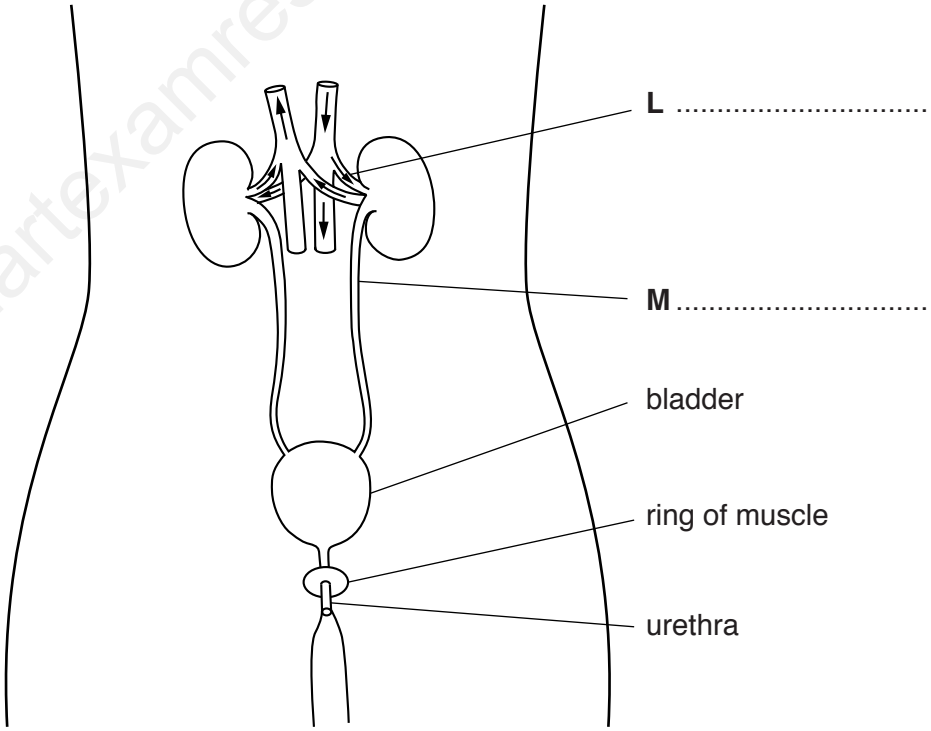

Fig. 8.1

(a) (i) Name the structures labelled **L** and **M**.

Write your answers on Fig. 8.1. [2]

(ii) Urea is excreted in the urine.

Name the organ that produces urea and suggest how urea is transferred to the kidneys.

.....

.....

.....[2]

(b) In an investigation, the volume of urine produced by a student each day is measured.

The results are shown in Table 8.1.

Table 8.1

day	volume of urine / cm^3 per day
1	1440
2	1510
3	1410
4	1445
5	910
6	1445
7	1500

Suggest **three** possible reasons for the lower volume of urine produced by the student on day 5.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

8 (a) (i) L – renal artery ;
M – ureter ;
[2]
(ii) produced by: liver ;
transferred in: blood / plasma / blood vessels / circulation ;
[2]

(b) 1 student drank less water / ate fewer foods, containing water ;
2 student sweated more / AW ;
3 (as) it was a hotter day ;
4 (as) student exercised / student had a fever
5 student ate a lot of salty food ;
6 lower humidity so water (vapour) lost in exhalation ;
[max 3]

Note:

- **AW alternative wording (where responses vary more than usual)**

6 **(a)** Define the terms

(i) excretion,

.....

..... [1]

(ii) egestion.

.....

..... [1]

(b) The kidney is an excretory organ. It produces urine that contains urea.

(i) State where in the body urea is formed.

..... [1]

(ii) State what urea is formed from.

..... [1]

(c) Fig. 3.1 shows the urinary system and its blood supply.

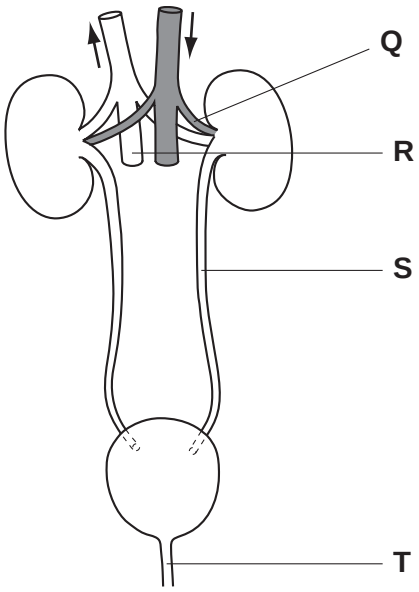

Fig. 3.1

Name the parts labelled **Q**, **R**, **S** and **T**.

Q .....

R .....

S .....

T ..... [4]

(d) Complete Table 3.1 to show which components of the blood are also part of the urine of a healthy person.

Use ticks (✓) and crosses (✕). Two boxes have already been completed.

Table 3.1

component of blood	present in urine
glucose	
red blood cells	
salts	
urea	✓
water	
white blood cells	✕

[2]

[Total: 10]

(a) (i) excretion is removal of waste materials formed by the body / metabolism; [1]
(ii) egestion is removal of undigested / undigestible materials [1]
(b) (i) liver; [1]
(ii) (excess) amino acids / ammonia / ammonium compounds; [1]
(c) Q – renal artery;
R – vena cava;
S – ureter;
T – urethra;

(d)

component of blood	present in urine
glucose	x
red blood cells	x
salts	✓
urea	
water	✓
white blood cells	

salts and water correctly indicated;

glucose and red blood cells correctly indicated; **[2]**

Note:

- **In part (c), you are expected to possess the knowledge with regards to urea, blood cells and water only with regards to your checkpoint syllabus**