BOTSWANA EXAMINATIONS COUNCIL
Botswana General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **0572/03**

Paper 3 **October/November 2018**

1 hour 15 minutes

Additional Materials: Answer Paper

260

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided at the top of this page.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the question paper.
Section B
Answer **both** questions in this section.
Write your answers on the separate answer paper provided.

Write your Centre number, candidate number and name on each sheet of answer paper you use.
At the end of the examination fasten all sheets of answer paper to this question paper using the string provided.
You may use a calculator.
Do not use staples, paper clips, highlighters, glue or correction fluid.
The number of marks is given in brackets [ ] at the end of each question or part question.
You are advised to spend no longer than 40 minutes on Section A.

A001

For Examiner's Use	
Section A	
Section B	
6	
7	
TOTAL	

This document consists of **8** printed pages.

For Examiner's Use

Section A

Answer **all** questions in this section in the spaces provided.

1 Complete the paragraph using the terms listed. A term may be used once, more than once or not at all.

cells **epidermis** **kidneys**

organ **organism** **systems** **tissue**

A large number of ..... that have the same structure and function are grouped together to form a tissue. ..... is an example of a tissue. Several separate tissues may be joined together to form an ....., which is a complex structure that can perform a particular task. These complex structures may work together in .....

[4]

[Total: 4]

2 **(a)** Table 2.1 shows types of blood vessels and descriptions of their features.

Complete Table 2.1 by placing ticks (✓) to show the features of each type of blood vessel. One example has been done for you.

Table 2.1

description of features	type of blood vessel		
	artery	vein	capillary
highest blood pressure			
little elastic tissue			
no elastic tissue			
blood flows in pulses			
thick wall	✓		
valves always present			
one cell thick wall			

[6]

For Examiner's Use

(b) Fig. 2.1 represents a sequence of events **1**, **2** and **3** which occur during a heartbeat.

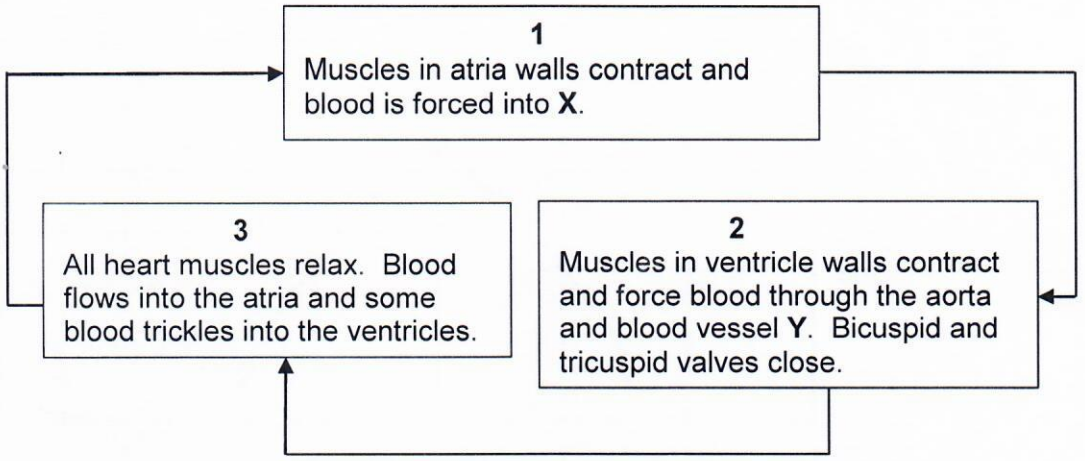

Fig. 2.1

(i) Identify structures **X** and **Y**.

X .....

Y .....

[2]

(ii) State the significance of the action of the valves in event **2** in Fig 2.1.

.....

..... [1]

(iii) State changes that occur in valves within the aorta during event **2** in Fig 2.1.

.....

..... [1]

[Total: 10]

For Examiner's Use

3 Fig. 3.1 shows changes in the concentration of lactic acid in the blood of an athlete over a period of 12 minutes.

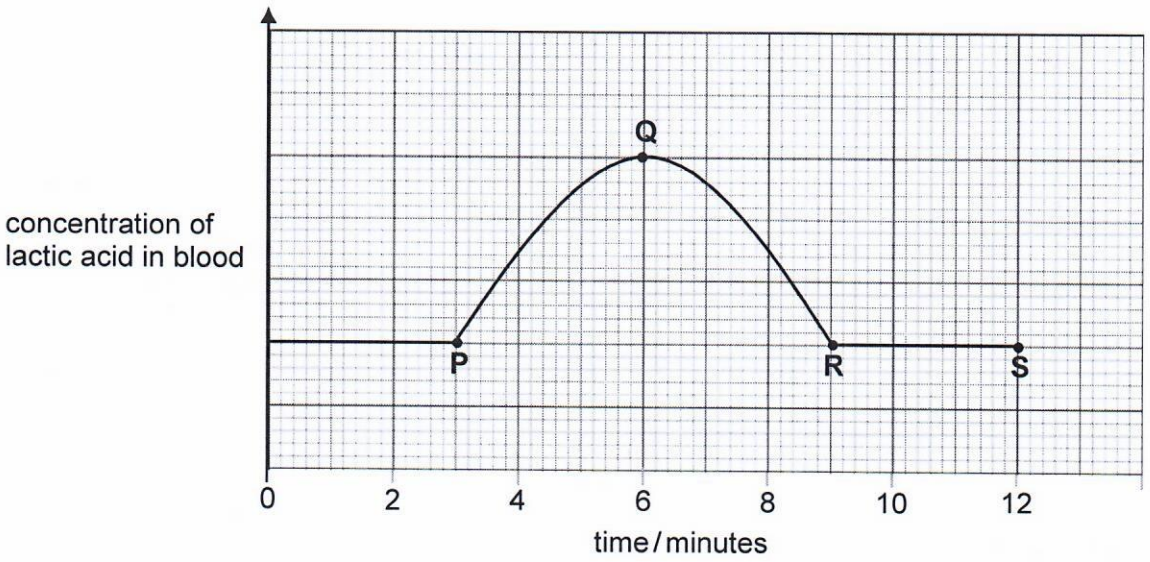

Fig. 3.1

(a) (i) From Fig. 3.1 deduce the period when the athlete was exercising.

..... [1]

(ii) Explain your answer to **(a)(i)**.

.....

.....

.....

..... [2]

(b) Explain the shape of the graph from **Q** to **R**.

.....

.....

.....

.....

..... [3]

For Examiner's Use

(c) During floods, soils may become water logged. This stops aerobic respiration in roots.

(i) Explain how the roots of some plants may continue to absorb mineral ions in water logged soils.

.....

.....

.....

.....

..... [3]

(ii) Complete word equation for aerobic respiration shown.

Glucose +..... ⟶ carbon dioxide + water + energy [1]

[Total: 10]

For Examiner's Use

4 Fig. 4.1 shows part of the human urinary system.

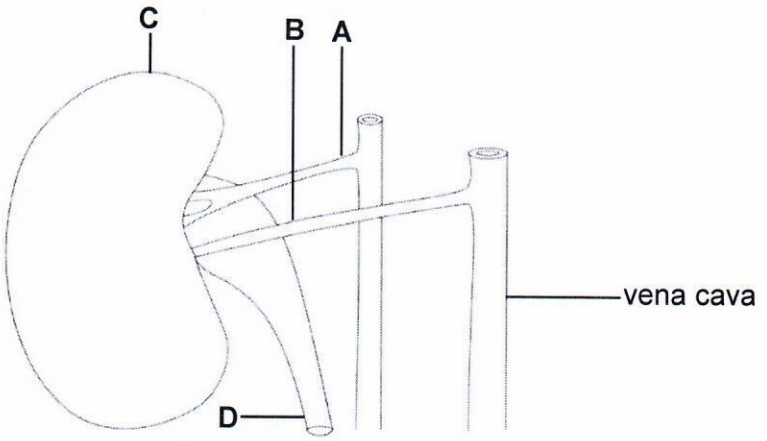

Fig. 4.1

(a) Identify structures **A** and **D**.

A.....

D.....

[2]

(b) Describe and explain the difference in composition of fluid in structure **A** and fluid in structure **D** on a normal day with regular intake of water.

.....

.....

.....

.....

.....

..... [4]

(c) Explain the importance of high pressure in blood flowing to the kidneys.

.....

.....

..... [2]

[Total: 8]

For Examiner's Use

5 Fig. 5.1 shows a cob with yellow and white seeds, obtained from a maize plant.

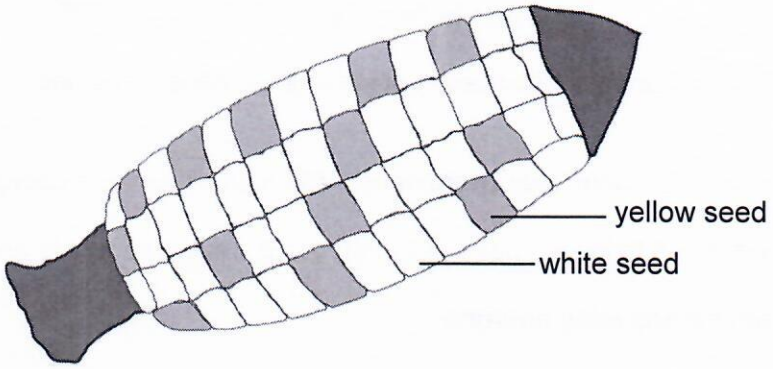

Fig. 5.1

(a) (i) The maize cob has 13 yellow seeds.

What is the number of white seeds shown in Fig. 5.1?

..... [1]

(ii) What is the genetic ratio shown by these seeds?

..... [1]

(iii) Suggest which of the two colours, yellow or white, is controlled by a dominant allele.

..... [1]

(b) Explain, with a full genetic diagram, how the ratio in **(a)(ii)** was achieved.
Use symbol **R** for the dominant allele and **r** for the recessive allele.

[5]

[Total: 8]

Section B

Answer **both** questions.

Write your answers on the separate answer paper provided.

6 **(a)** State **four** ways in which hormonal coordination differs from nervous coordination. [4]

(b) Distinguish between the following pairs of terms, using examples where necessary:

(i) sensory neurone and relay neurone, [4]

(ii) endocrine gland and exocrine gland, [4]

(iii) geotropism and phototropism. [3]

[Total: 15]

7 **(a)** List main characteristics of green algae based on their structure, nutrition and reproduction. [6]

(b) Discuss the role of mosquitoes and a named protozoan in causing and transmitting malaria. [9]

[Total: 15]