BOTSWANA EXAMINATIONS COUNCIL
Botswana General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

BIOLOGY

Paper 3

0572/03

October/November 2019

1 hour 15 minutes

Additional Materials: Answer Paper

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.
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.

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

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

[Turn over

For Examiner's Use

Section A

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

1 Fig. 1.1 shows part of a fungus.

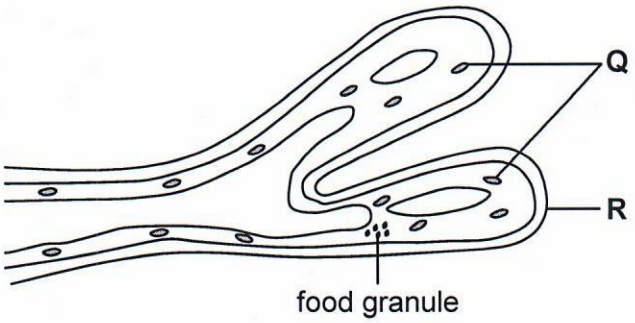

Fig. 1.1

847

(a) Identify parts **Q** and **R** in Fig. 1.1.

Q .....

R ..... [2]

(b) Give **two** similarities and **two** differences between the organism in Fig.1.1 and a bacterium.

Similarities

1. .....

.....

2. .....

.....

Differences

A002

Fig. 1.1	bacterium
1	
2	

[4]

(c) Describe the mode of nutrition for Fungi.

.....

.....

..... [2]

[Total: 8]

2 Fig. 2.1 shows the left side of the heart of a person.

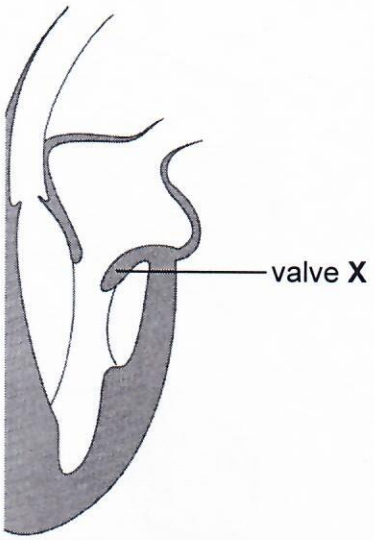

Fig. 2.1

(a) (i) Name valve **X**.

..... [1]

(ii) Describe and explain how the body will be affected if valve **X** fails to close.

.....

.....

.....

.....

..... [4]

(b) Suggest **two** advantages of dual circulation.

.....

.....

.....

..... [2]

[Total: 7]

3 Fig. 3.1 shows the male reproductive system.

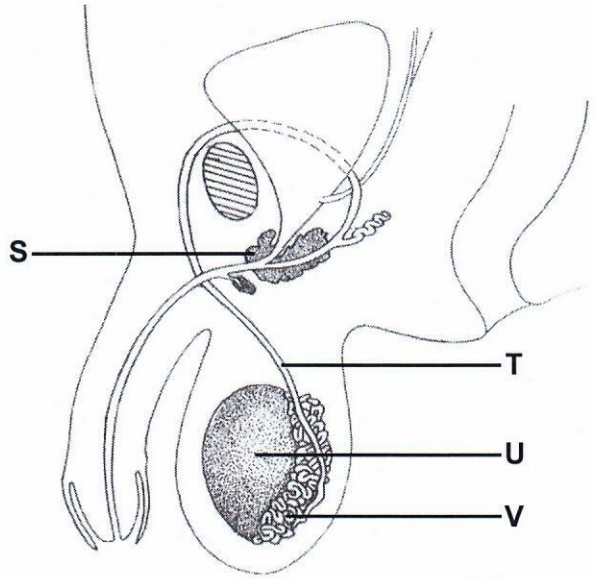

Fig. 3.1

(a) Name the part labelled **S** and state its function.

Name of part .....

Function .....

[2]

(b) (i) State which letter in Fig. 3.1 represents the structure where meiosis occurs.

..... [1]

(ii) Suggest the importance of meiosis in reproduction.

.....

.....

..... [2]

(c) Distinguish between prophase in mitosis and prophase I in meiosis.

.....

.....

.....

..... [2]

[Total: 7]

4 Yeast and glucose solution were mixed to make a suspension. The suspension was divided into three equal volumes and placed at different temperatures for 30 minutes. Fig. 4.1 shows the results of the investigation.

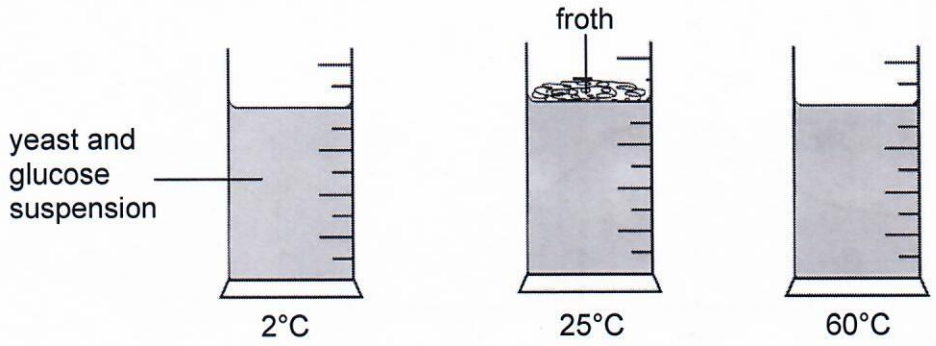

Fig. 4.1

(a) Explain the difference between results at 2°C and at 25°C.

.....

.....

.....

..... [4]

(b) The suspension kept at 60°C was then placed at 25°C for another 30 minutes.

(i) Predict what will happen in this suspension.

.....

..... [1]

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

.....

.....

..... [2]

[Total: 7]

For Examiner's Use

5 Fig. 5.1 shows changes in the adrenaline levels in the blood of a girl who was frightened by a dog. The girl ran away and reached home after 20 minutes.

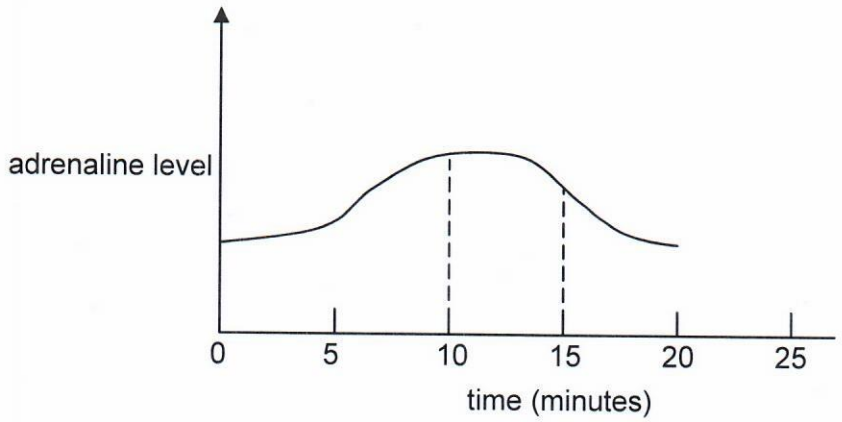

Fig. 5.1

847

(a) Describe the shape of the graph between 0 and 15 minutes.

.....

.....

..... [2]

(b) Explain how the effects caused by the change in the level of adrenaline in the first 15 minutes prepared the girl for running.

.....

.....

.....

.....

.....

.....

.....

..... [7]

A002

(c) Suggest the organs responsible for destruction of spent adrenaline and its removal from the blood.

destruction of spent adrenaline

.....

removal of spent adrenaline

.....

[2]

[Total: 11]

Section B

Answer **both** questions.

Write your answers on the separate answer paper provided.

6 Fig. 6.1 shows a method of asexual reproduction used in commercial farming.

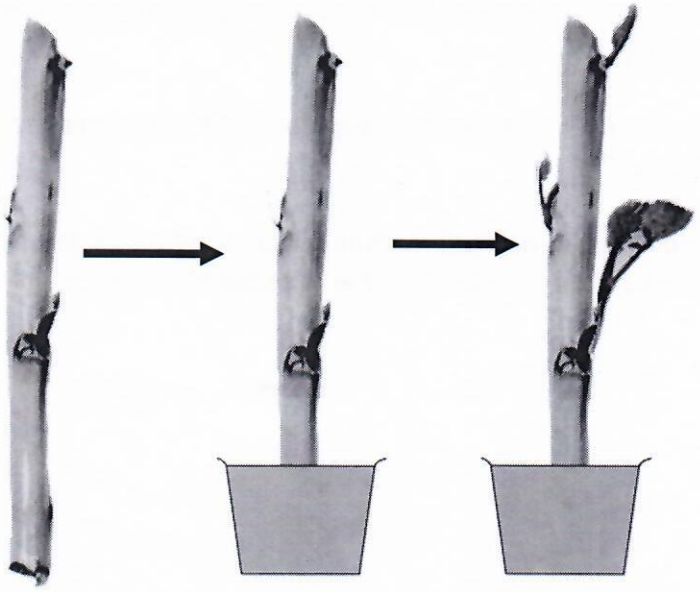

Fig. 6.1

(a) (i) State the name of the method of reproduction illustrated in Fig. 6.1. [1]

(ii) Describe how using the method illustrated in Fig. 6.1 could be a disadvantage to farmers. [4]

(b) Describe and explain how magnesium deficiency in the soil would affect the development of the plant in Fig. 6.1. [5]

(c) Flowers have features that adapt them for attracting agents of pollination such as bees. Heavy air pollution may interfere with flower pollination.

Explain how pollution might interfere with pollination. [5]

[Total: 15]

7 **(a)** Distinguish between continuous and discontinuous variation and give **one** example of each, other than blood groups. [4]

(b) A man of blood group **B** is married to a woman. They have three sons and a daughter. The sons are of blood groups **A**, **B** and **AB**. The daughter is married to a man of blood group **B** and they have two sons of blood group **AB** and **O**.

(i) Use the information provided to construct a pedigree for inheritance of blood groups for this family. [4]

(ii) Given that the genotype of the daughter is I^AI^O, what are the **two** possible genotypes of her mother? [1]

(c) The son of blood group **A** (I^AI^O) marries a woman of blood group **AB**.
Use a genetic diagram to determine the possible blood groups of their children. [6]

[Total: 15]