BOTSWANA EXAMINATIONS COUNCIL
Botswana General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

BIOLOGY **0572/03**

Paper 3 **October/November 2015**

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 **7** printed pages and **1** blank page.

[Turn over

For Examiner's Use

Section A

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

1 Fig. 1.1 is a diagram of a yeast cell in a mixture of crushed malt and water.

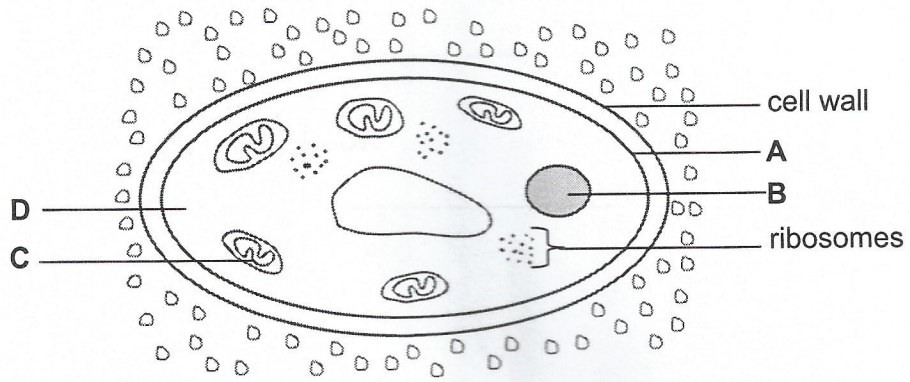

Fig. 1.1

(a) (i) Identify structures **B** and **D** in Fig. 1.1.

B .....

D ..... [2]

(ii) Describe how **named** nutrients can enter the yeast cell.

.....

.....

.....

.....

.....[4]

(iii) Describe the role played by part **C** in helping nutrients to enter the yeast cell.

.....

.....

.....[2]

(b) Active yeast cells produce gas bubbles in the mixture.

Name the gas produced.

..... [1]

[Total: 9]

3 Fig. 3.1 shows two different enzymes and a substrate before, during and after a reaction. The enzymes are represented as locks, and the substrate molecule as keys.

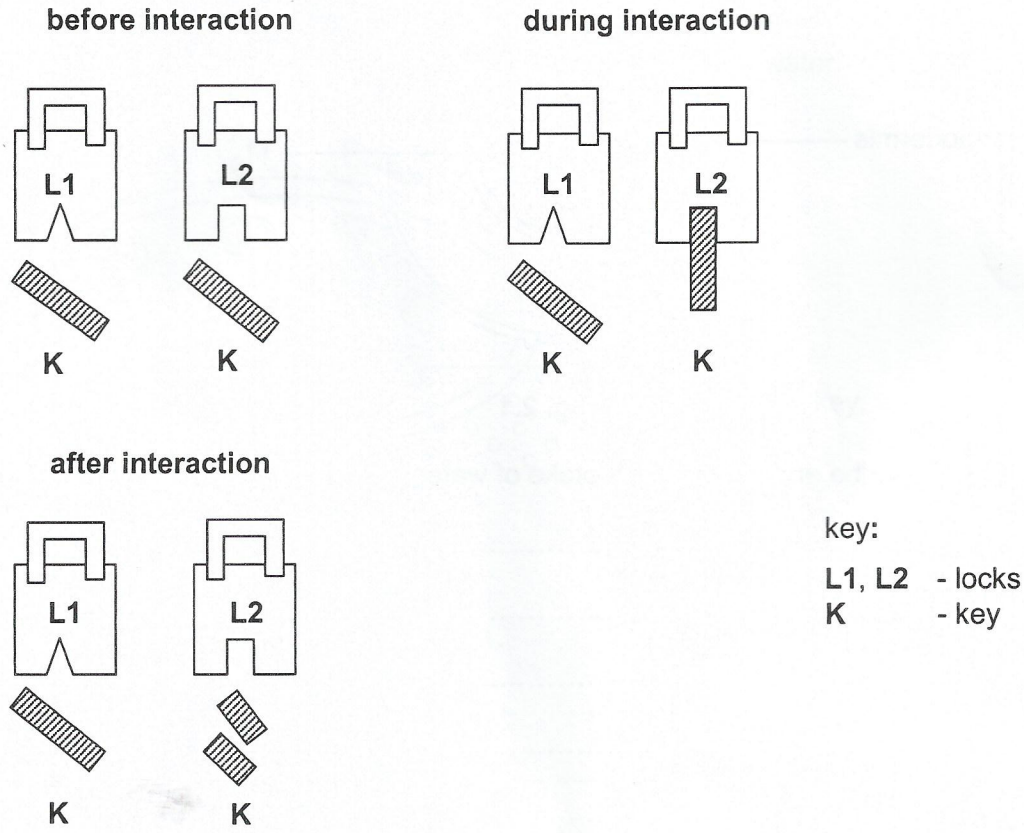

Fig. 3.1

(a) Define the term *enzyme.*

.....

..... [2]

(b) State **two** characteristics of enzymes that are explained by the lock and key model.

1. .....

2. ..... [2]

(c) Suggest how the lock and key model can explain why enzymes do not work at very high temperatures.

.....

.....

.....

..... [3]

[Total: 7]

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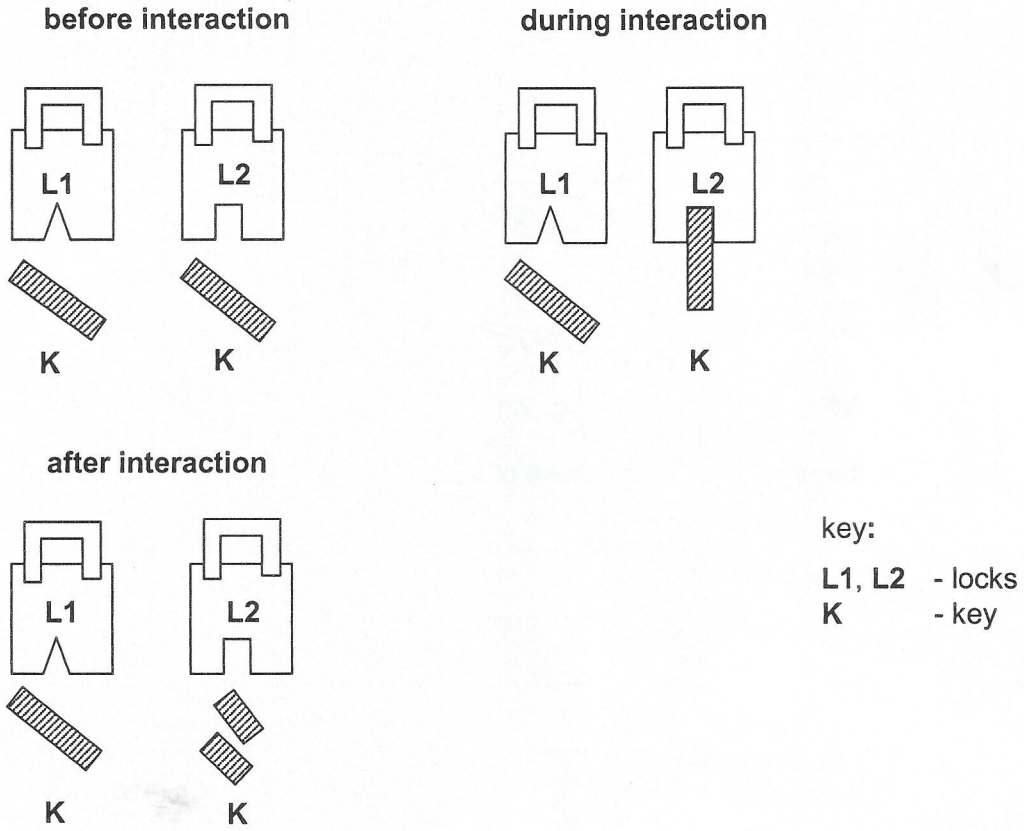

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.....

.....

.....

..... [3]

[Total: 7]

4 Fig. 4.1 shows a nephron, with parts labelled **P**, **Q**, **R** and **S**.

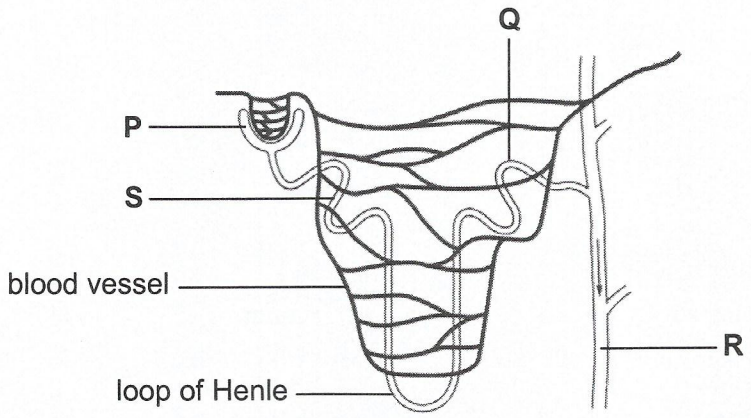

Fig. 4.1

(a) Identify parts **P** and **R** in Fig. 4.1.

P .....

R ..... [2]

(b) **(i)** Name **two** substances, other than water, which move into **P** from the blood.

1. .....

2. ..... [2]

(ii) Describe how substances move into part **P** from the blood.

.....

.....

..... [2]

(c) Explain the movement of substances from part **Q** and from part **S**, into the blood.

.....

.....

.....

.....

..... [3]

[Total: 9]

5 Fig. 5.1 shows a nerve cell.

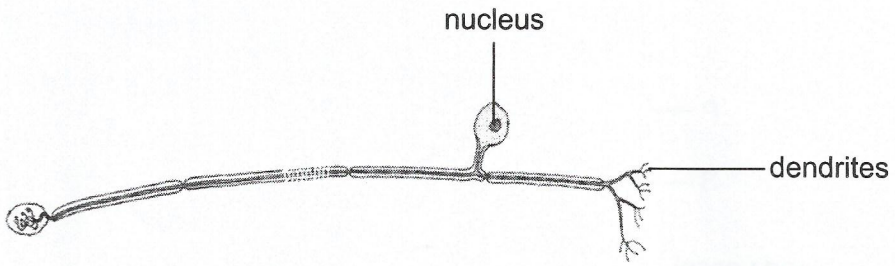

Fig. 5.1

(a) **(i)** Identify the nerve cell shown in Fig. 5.1.

.....[1]

(ii) Give **two** observable features which enabled you to identify the nerve cell in Fig. 5.1.

1. .....

.....

2. .....

.....[2]

(b) The paragraph below describes a reflex action. Use the list of words given below to complete the paragraph. A word may be used once only or not at all.

effectors	**neurones**	**rapid**	**receptors**
slow	**spinal cord**	**stimulus**	

A reflex action is a ..... response to a .....

It involves either the ..... or the unconscious part of the brain.

The impulses leading to a reflex action are carried by .....

The ..... bring about appropriate action. [5]

[Total: 8]

Section B

Answer **both** questions.

Write your answers on the separate answer paper provided.

6 Insulin is a hormone that is sometimes administered as a drug.

(a) **(i)** Describe the use of insulin as a drug. [3]

(ii) Describe the usual functions of insulin in the body. [6]

(b) State and explain the effect of alcohol on human reaction time. [2]

(c) Describe dependence and tolerance to pain killers. [4]

[Total: 15]

7 **(a)** **(i)** A woman of blood group **B** and a man of blood group **A** have a biological child. The man and the woman are both heterozygous. With the aid of a genetic diagram, determine the percentage chance of their child being of blood group **O**. [8]

(ii) With reference to blood group inheritance, describe co-dominance. [3]

(b) Explain the risk of blood transfusion from a healthy person of blood group **A** to a person of blood group **B**. [4]

[Total: 15]