



EXAMINATIONS COUNCIL OF SWAZILAND  
 in collaboration with  
 UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE  
 Swaziland General Certificate of Secondary Education

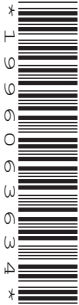
CANDIDATE  
 NAME

CENTRE  
 NUMBER

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**BIOLOGY**

**6884/02**

Paper 2 Core

**October/November 2012**

**1 hour 15 minutes**

Candidates answer on the Question Paper.

No additional materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

You may use a calculator.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
<b>Total</b>	

This document consists of **12** printed pages.

- 1 (a) Fig. 1.1 shows the changes in the quantities of various constituents of a person's diet as they pass through the digestive system.

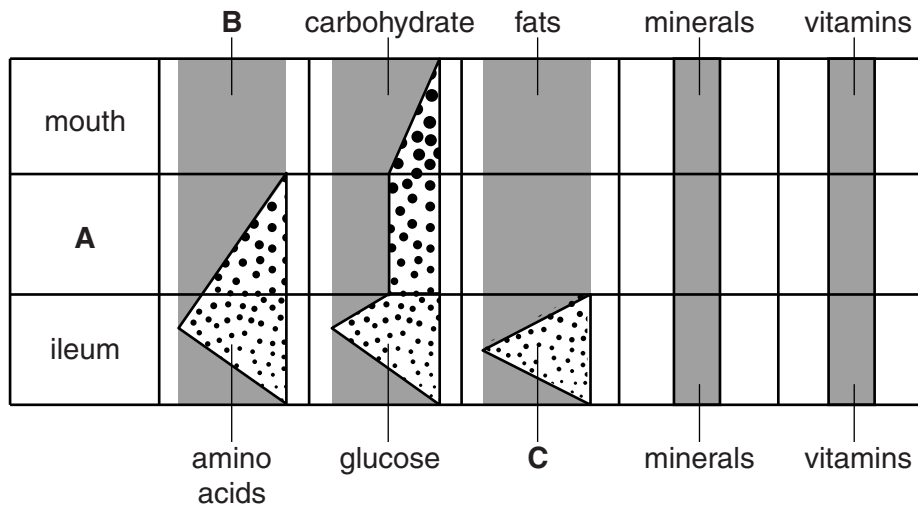


Fig. 1.1

- (i) Name structure A.

..... [1]

- (ii) Name nutrients B and C.

**B**.....

**C**..... [2]

- (iii) Describe and explain the changes that occur in carbohydrates in the mouth.

.....  
 .....  
 .....  
 .....  
 ..... [3]

- (iv) Explain why there is no change in the width of the bars representing minerals and vitamins.

.....  
 .....  
 ..... [2]

(b) Explain what happens to the amino acids in the small intestines.

.....

.....

.....

.....

.....

.....

..... [2]

**[Total: 10]**

2 Fig. 2.1 shows a longitudinal section through a kidney.

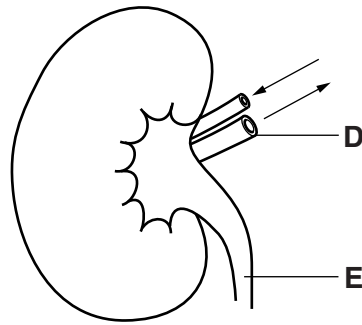


Fig. 2.1

(a) Name parts **D** and **E** in Fig. 2.1.

**D** .....

**E** ..... [2]

(b) State two functions of the kidney.

1 .....

.....

2 .....

..... [2]

(c) State two differences in the composition of the blood entering and leaving the kidney.

1 .....

.....

2 .....

..... [2]

(d) Describe the role of the liver in

(i) the formation of urea,

.....

..... [2]

(ii) the breakdown of alcohol.

.....

..... [1]

[Total: 9]

3 (a) Explain the term *enzyme*.

.....  
..... [2]

Fig. 3.1 shows the effect of pH on the reaction rate of three enzymes **F**, **G** and **H**.

Study Fig. 3.1 and answer the questions that follow.

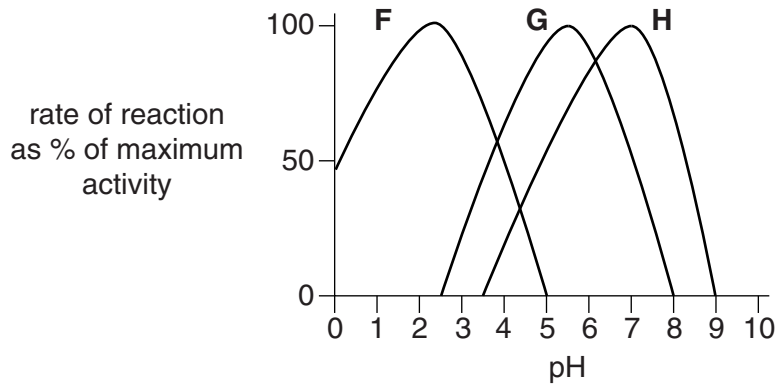


Fig. 3.1

(b) (i) State the optimum (best) pH for enzyme **G**.

..... [1]

(ii) Identify enzymes **F** and **H**

enzyme **F** .....

enzyme **H** ..... [2]

(c) Peeled apples turn brown when they are exposed to air. Enzymes cause this browning.

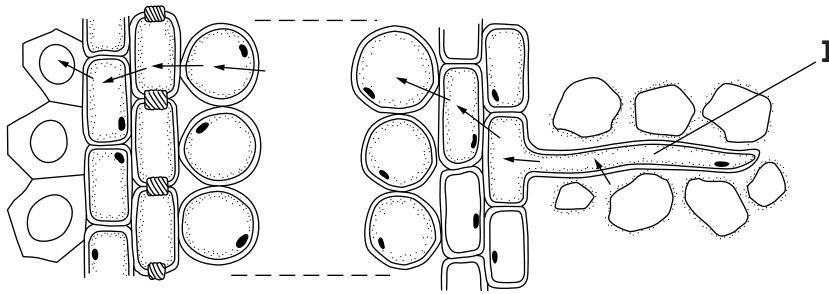
State two ways by which this enzyme activity could be slowed down.

1.....  
.....

2.....  
..... [2]

[Total: 7]

4 Fig. 4.1 shows the direction of water movement through a root.



**Fig. 4.1**

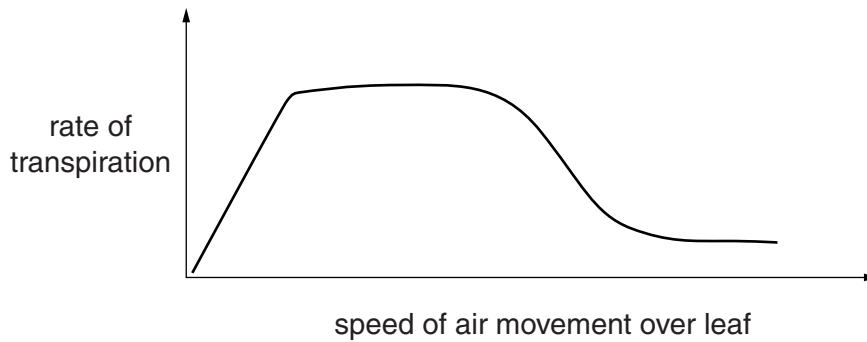
(a) (i) Describe how cell **I** is adapted for the absorption of water and mineral salts.

.....  
 .....  
 ..... [3]

(ii) Describe the movement of water from the soil to cell **I**.

.....  
 .....  
 ..... [3]

(b) Fig. 4.2 shows the relationship between the rate of transpiration in a plant and the speed of air movement over its leaves.



**Fig. 4.2**

(i) Describe the relationship between the speed of air movement over leaves and the rate of transpiration shown in Fig. 4.2.

.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

(ii) Name one other condition that affects the rate of transpiration.

..... [1]

**[Total: 11]**

5 Fig. 5.1 shows part of a respiratory system.

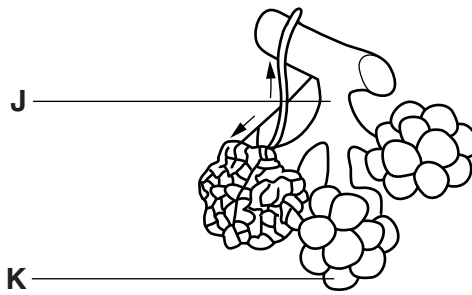


Fig. 5.1

(a) Name the parts labelled J and K.

J..... [2]

K..... [2]

(b) Describe two features of structure K that make it efficient for gaseous exchange.

1..... [2]

..... [2]

2..... [2]

..... [2]

(c) Name two major toxic substances found in tobacco.

1..... [2]

2..... [2]

(d) The short-term effects of smoking are that the air passages constrict and the cilia lining the air passages stop beating.

Describe the effects of the constriction of bronchioles and non-beating of cilia on the respiratory system.

*constriction of bronchioles*

..... [1]

..... [1]

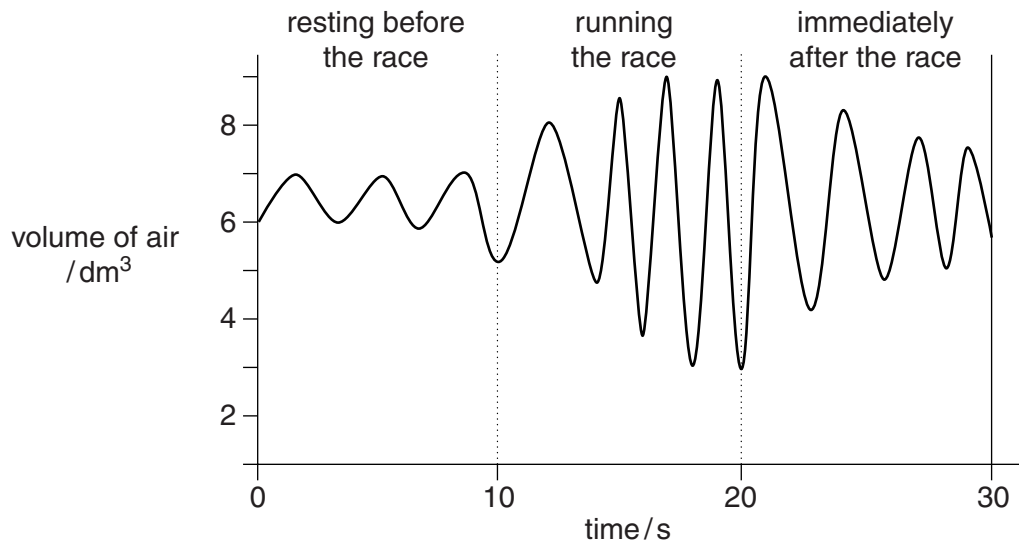
*non-beating of cilia*

..... [2]

..... [2]



(e) Fig. 5.2 shows the volume of air inhaled and exhaled by a runner.



**Fig. 5.2**

(i) State the volume of air inhaled by the runner in each breath before the race.  
 ..... [1]

(ii) State the number of breaths the runner takes per minute before the race.  
 ..... [2]

(iii) Calculate the volume of air inhaled in the deepest breath taken by the runner in the race.  
 ..... [1]

(iv) Describe the changes shown in Fig. 5.2 in the volume and rate of breathing before and after the race.  
 .....  
 .....  
 ..... [2]

(v) Name the hormone that is secreted in the body of the runner a few minutes before the gun is fired to start the race.  
 ..... [1]

**[Total: 16]**

6 Fig. 6.1 shows a reflex arc of a hand touching a hot stove.

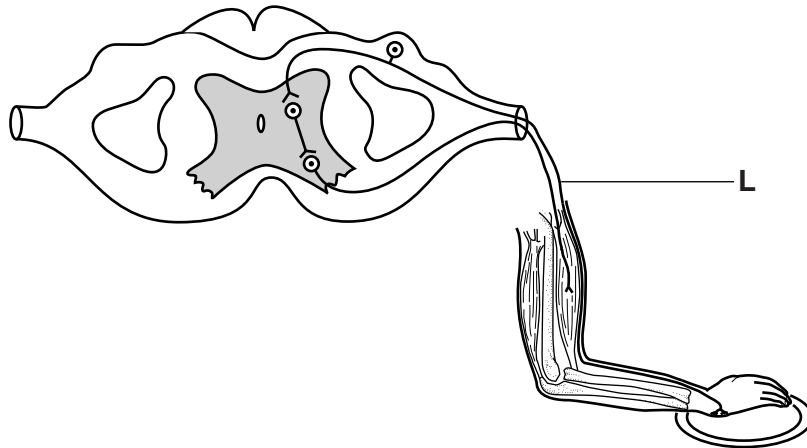


Fig. 6.1

(a) Name the nerve cell L.

..... [1]

(b) The hand is quickly lifted up from the hot stove.

(i) Describe what happens to the muscles of the arm to enable the hand to be lifted up from the hot stove.

.....  
.....  
.....  
..... [4]

(ii) Name two bones that move when the arm is bent at the elbow.

1 .....  
2 ..... [2]

(c) Name two other stimuli to which the hand may respond.

1.....  
2..... [2]

[Total: 9]

7 (a) A girl has a menstrual cycle of 28 days. She had her first day of menstruation on the 9th of January.

(i) State the date on which she is likely to ovulate.

..... [1]

(ii) State the role of progesterone in the menstrual cycle.

.....  
.....  
..... [1]

(b) If there is sexual intercourse during ovulation, fertilisation may take place.

Describe the process of fertilisation.

.....  
.....  
..... [2]

(c) Describe the **three** main stages of birth.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [6]

**[Total: 10]**

8 (a) There is a great variation within human beings.

Name the two types of variation found within an organism that reproduces only by sexual reproduction.

1 .....

2 ..... [2]

(b) Some variations occur as a result of spontaneous change in genes or chromosomes.

What name is given to this spontaneous change?

..... [1]

(c) A large number of grey rocks form the habitat for a population of rats. The rats are the prey of snakes also living amongst the rocks. Fig. 8.1 shows how size of the rat population changes over a six months period.

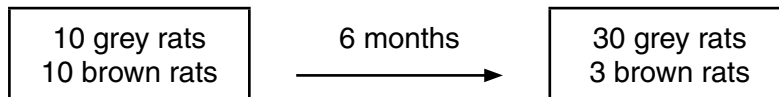


Fig. 8.1

Describe and explain the changes in the population of the rats over the 6 months.

.....  
.....  
.....  
..... [4]

(d) Farmers usually breed their cattle using a selected large bull which is resistant to diseases.

Name this type of selection.

..... [1]

[Total: 8]