

Centre Number		Candidate Number										

Candidate Name _____

EXAMINATIONS COUNCIL OF ZAMBIA
Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level

BIOLOGY
PAPER 2 Theory

5090/2

Monday

9 NOVEMBER 2009

1 hour 45 minutes

Additional materials:
Answer Booklet

TIME: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page and on the Answer Paper used.

There are **ten** questions in this paper.

Section A

Answer **all** questions.

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

Section B

Answer any **three** questions.

Write your answers in the Answer Booklet provided.

At the end of the examination:

1. fasten the Answer Booklet used securely to the question paper,
2. **enter** the numbers of the Section B questions you have answered in the grid on the right.

INFORMATION FOR CANDIDATES

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

You are advised to spend no longer than one hour on Section A and no longer than 45 minutes on Section B.

Cell phones are not allowed in the examination room.

FOR EXAMINER'S USE	
Section A	
Section B	
Total	

This question paper consists of 7 printed pages

1 Figure. 1.1 shows some cells taken from a vascular tissue of a plant.

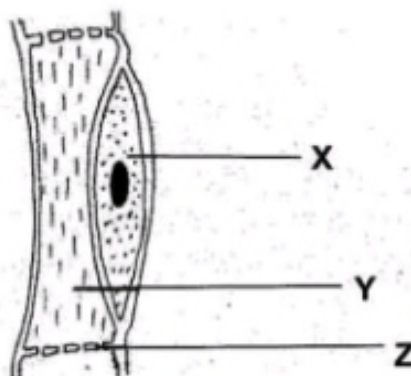


Figure 1.1.

(a) Identify the cells X and Y and structure labelled Z.

Cell X

Cell Y

Structure Z [3]

(b) What are the functions of the cells labelled

(i) X

..... [1]

(ii) Y

..... [1]

(iii) What structure, in the human body, performs a similar function as structure Y?

.....

..... [1]

(c) What **two** conditions are necessary for osmosis to take place?

1

.....

2

..... [2]

[Total 8]

- 2 (a) Figure 2.1 shows the amount of lactic acid in the blood before, during and after a heavy exercise.

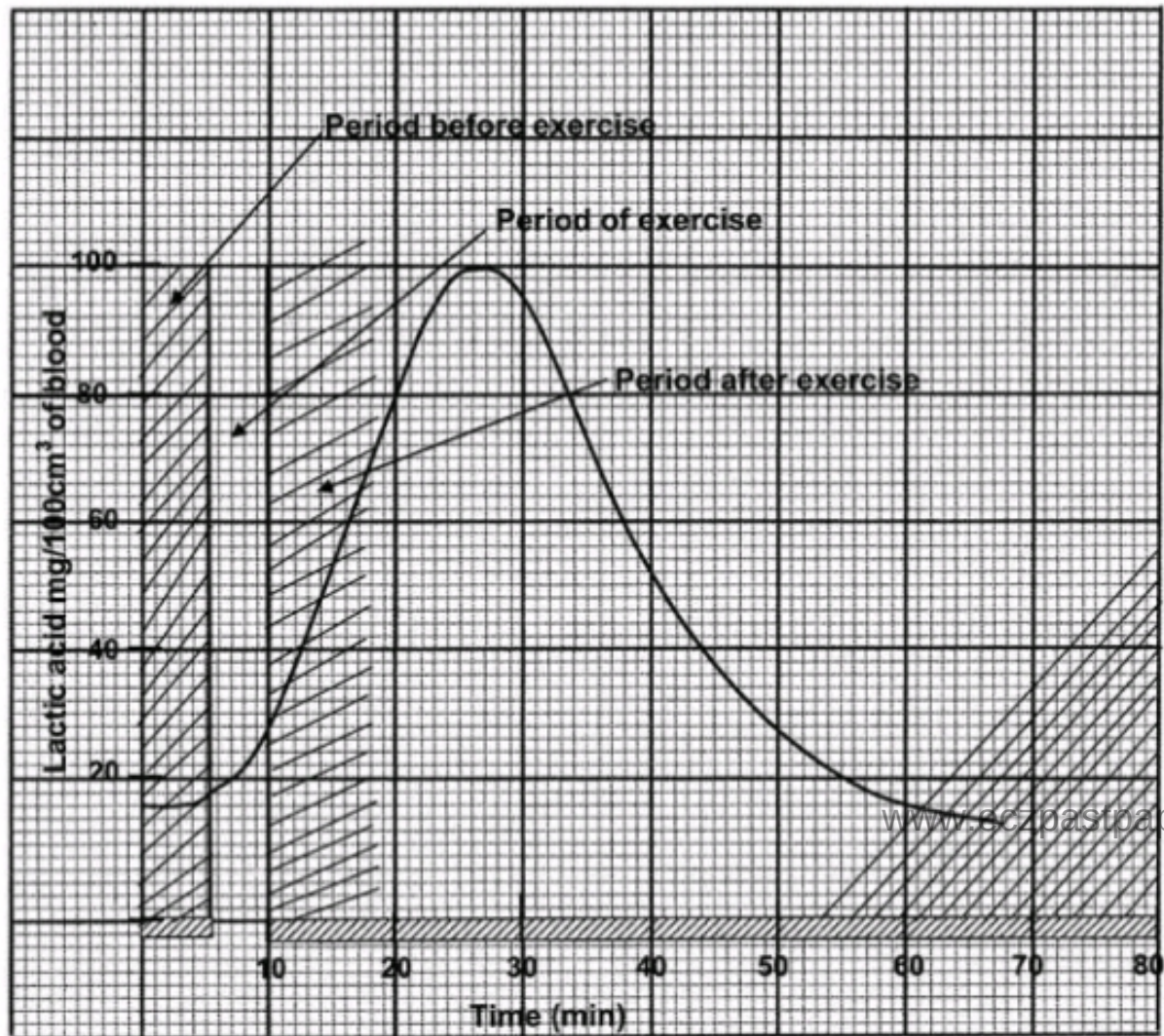


Figure 2.1

- (a) (i) What was the level of lactic acid in the blood before the exercise?

..... [1]

- (ii) How much lactic acid was produced at 20 minutes after the exercise?

..... [1]

- (iii) How long did it take for the lactic acid to reach its highest level after the exercise had begun?

..... [1]

(b) (i) What is the reason for the build up of lactic acid in the blood?

.....

[1]

(ii) What are the effects of the build up of this lactic acid on the person?

.....

[2]

(iii) Compare the products of the process taking place during the heavy exercise to that which takes place in yeast cells?

.....

[2]

(c) Suggest **two** uses of the process identified in b (i)

1

 2

www.eczpastpapers.com

[2]

[Total 10]

3 (a) Complete the **Table 3.1**, by filling in the blank spaces.

	HORMONE	SOURCE	ACTION
(i)		Ovary	Begins rebuilding the lining of the uterus
(ii)	Thyroxine	Thyroid gland	
(iii)		Adrenal gland	

Table 3.1

[4]

(b) What happens to the hormones after completing their action in target organs?

.....

[2]

- (c) State **two** ways in which hormones and nerve impulses differ in controlling body processes?

1

.....

2

..... [2]

[Total 8]

- 4 **Figure 4.1** and **Figure 4.2** show pyramids of food relationship among organisms in a forest and a lake.

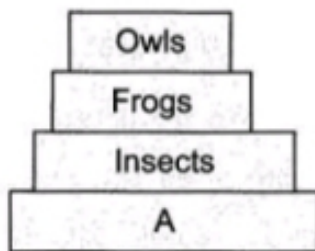


Figure 4.1 Forest

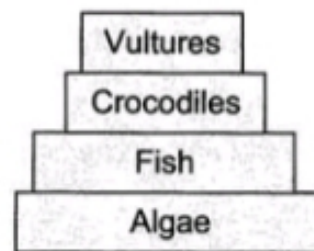


Figure 4.2 Lake

- (a) (i) Identify the organism found in trophic level labelled **A** in **Figure 4.1**.

.....

..... [1]

- (ii) What would happen if the population of insects in **Figure 4.1** reduced?

.....

.....

..... [2]

- (b) (i) What is the ultimate source of energy for both pyramids?

..... [1]

- (ii) Explain the differences in energy between trophic levels as you go up the pyramids.

.....

.....

.....

..... [2]

- (c) Traces of DDT applied on a nearby farm were washed by rain into the lake and were taken up by algae in **Figure 4.2**.

Why was there more DDT in organisms in the fourth trophic level of **Figure 4.2** than in those in the first trophic level?

.....

.....

.....

..... [2]

[Total 8]

- 5 (a) Haemophilia is an example of a sex-linked inherited disease arising from a blood disorder.

- (i) What is a sex-linked characteristic?

.....

..... [1]

- (ii) Explain why males are more likely to suffer from sex-linked diseases than female?

.....

.....

.....

..... [2]

- (b) Colour blindness is another sex-linked disease. Using a genetic diagram, show the chances of having a colour blind child from a couple made up of a normal male parent and a carrier female parent. (Use the symbols X^R and X^r).

[7]

[Total 10]

Section BAnswer any **three** questions.

All answers should be in sentence form in paragraphs.

- (a) Explain how leaves are adapted to carry out photosynthesis. [4]
- 6 (b) How does a plant get and use the following elements:
- (i) Nitrogen
- (ii) Magnesium [4]
- (c) Explain how enzyme activity is affected by the pH and concentration of the substrate. [4]
- [Total: 12]**
- 7 (a) (i) Explain the role of the kidney in excretion. [3]
- (ii) Explain the role of the kidneys in homeostasis. [3]
- (b) Describe the disadvantages of a kidney transplant. [3]
- (c) Explain why there is limited excretion of nitrogenous wastes and salts in plants. [3]
- [Total: 12]**
- 8 (a) What are the advantages of sexual reproduction over asexual reproduction in flowering plants? [5]
- (b) Explain how asexual reproduction in a fungi, such as a *Rhizopus*, takes place. [3]
- (c) Describe the sequence of events which take place in a flower from pollination to fertilization. [4]
- [Total: 12]**
- 9 (a) What is the importance of the following in relation to blood?
- (i) Leukemia
- (ii) Sickle cell anaemia [2]
- (b) Explain the role of house flies in disease transmission. [2]
- (c) Discuss the cause, signs, symptoms and prevention of malaria. [8]
- [Total: 12]**
- 10 (a) (i) Explain the importance of transpiration. [3]
- (ii) Explain how **two** named environmental factors affect the rate of transpiration. [4]
- (b) Describe the role of blood in transporting materials in the body. [5]

[Total 12 marks]