Centre Number	Candidate Number

Candidate Name _____

EXAMINATIONS COUNCIL OF ZAMBIA

Joint Examination for the School Certificate and General Certificate of Education Ordinary Level

BIOLOGY 5090/2

PAPER 2 Theory

Tuesday **7 OCTOBER 2014**

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 Booklet** 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 bottom right side corner.

FOR EXAMINER'S USE	
Section A	
Section B	
Total	

INFORMATION FOR CANDIDATES

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 one hour on Section A and no longer than 45 minutes on Section B.

Cell phones are not allowed in the examination room.

Section A [44 marks]

Answer **all** the questions in the spaces provided on the question paper.

1 ***Figure 1.0*** shows organisms in an ecosystem.

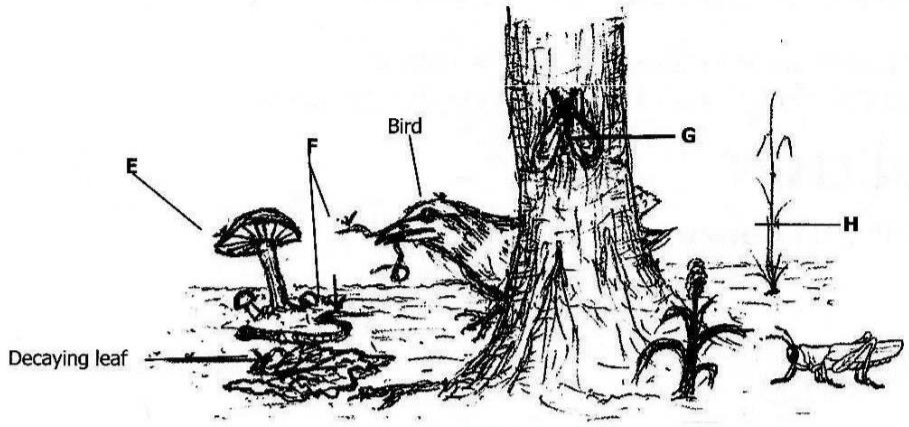

Figure 1.0

(a) Using letters classify the following organisms in ***Figure 1.0***

Group	Letters
Angiosperm	
Reptile	
Fungi	

[3]

(b) What type of nutrition is carried out by organisms **E** and **H**?

Organism **E**: .....

Organism **H**: ..... [2]

(c) State **two** differences between the cells found in organisms **G** and **H**.

1. .....

2. ..... [2]

(d) Construct a food chain using organisms found in ***Figure 1.0.***

.....[2]

[Total 9]

For Examiner's Use

2 ***Figure 2.0*** shows the movement of dissolved substances in the digestive system and some associated parts.

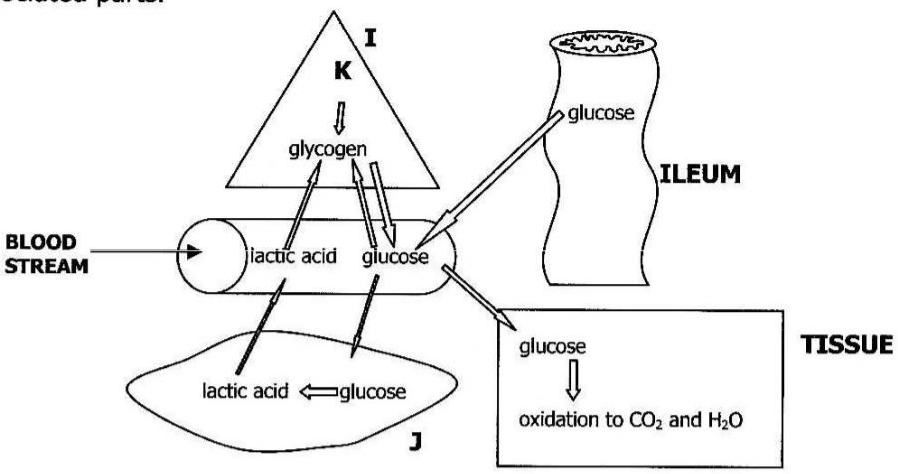

Figure 2.0

(a) Name the structures labelled **I** and **J**.

I: .....

J: .....[2]

(b) **(i)** Name **one** product of digestion in the ileum which is not transported by blood.

.....[1]

(ii) Name the enzyme in the ileum whose activity produces glucose.

.....[1]

(c) Substance **K** when broken down produces a waste substance and glycogen.

(i) Identify substance **K**

.....[1]

(ii) Suggest **two** uses of substance **K** in the body.

1. .....

2. .....[2]

(d) State under what conditions the product in structure **J** is produced.

.....

.....[2]

[Total: 9]

3 ***Figures 3.1*** and ***3.2*** show part of the circulatory system in humans.

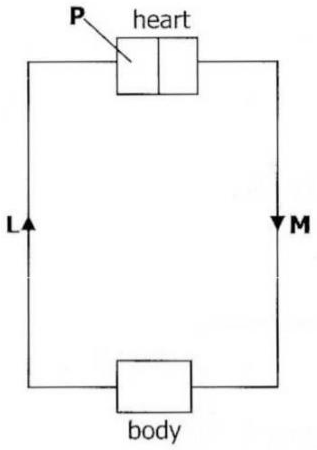

Figure 3.1

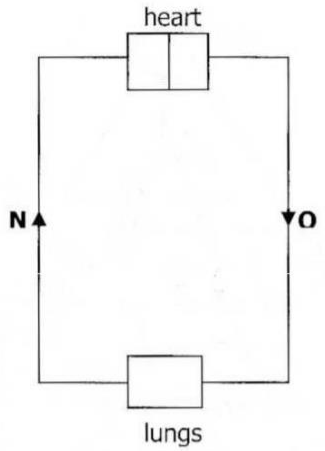

Figure 3.2

(a) Identify the **two** types of circulation illustrated in ***Figures 3.1*** and ***3.2.***

Figure 3.1.....

Figure 3.2..... [2]

(b) (i) Suggest the names of blood vessels labelled **M** and **O** in **figure 3.1** and **3.2.**

Blood vessel **M**: .....

Blood vessel **O**: ..... [2]

(ii) State **two** differences between blood vessels **M** and **O**.

1 .....

.....

2. .....

..... [2]

(c) State the name of the heart chamber labelled **P** in ***Figure 3.1***.

.....

..... [1]

(d) State **two** blood disorders found in humans.

1 .....

.....

2. .....

..... [2]

[Total 9]

4 ***Figure 4.0*** shows the longitudinal section through a human kidney.

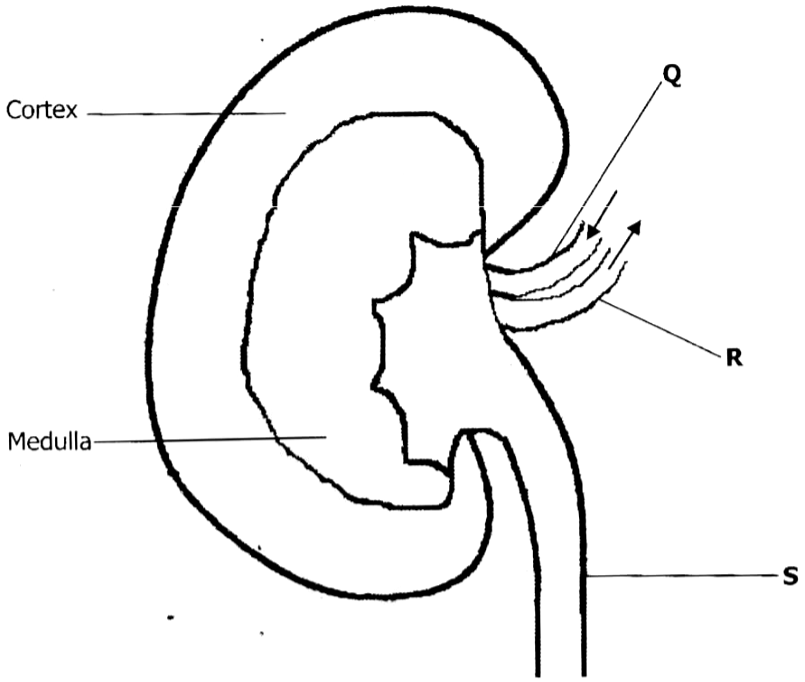

Figure 4.0

(a) (i) Identify the blood vessels labelled **Q** and **R**.

Q: .....

R: ..... [2]

(ii) State two waste substances that are likely to be present in the liquid which pass through the structure labelled S.

1. .....

2. ..... [2]

(b) State **two** processes that occur in the kidney during urine formation.

1. .....

2. ..... [2]

(c) (i) Suggest **two** methods of how a person with kidney failure may live a normal life.

1. .....

2. ..... [2]

(ii) State the hormone that affects osmoregulation in the kidney.

..... [1]

[Total: 9]

[Turn over

5 **(a)** Explain what is meant by the term sex-linked characteristic.

.....

..... [2]

(b) The allele for haemophilia (h) is a recessive allele carried on the non-homologons pair of the X chromosome.

(i) A couple is both normal to this trait. They have three sons, two of whom are haemophilic. Use a genetic diagram to explain how this may occur. [5]

(ii) What is the probability of their next son being haemophilic?

..... [1]

[Total: 8]

For Examiner Use

Section B [36 marks]

Answer any **three** questions.

All answers should be in sentence form in paragraphs.

6 **(a)** Explain what is meant by the term aerobic respiration. [2]

(b) Describe the adverse effects of named air pollutants on the health of human Beings. [6]

(c) Explain how some parts of the respiratory system are adapted to minimise the entry of air pollutants into the lungs. [4]

[Total: 12]

7 **(a)** Using named examples explain how fruits and seeds are adapted to fruit/seed dispersal. [6]

(b) Explain the advantages and disadvantages of vegetative propagation. [6]

[Total: 12]

8 **(a)** Explain what is meant by the term positive phototropism. [2]

(b) Explain the effects of gravity on the plumule and radical in a germinating seed. [4]

(c) Compare and contrast the hormones adrenalin and glucagon. [6]

[Total: 12]

9 **(a)** Distinguish between a ball-and-socket joint and a hinge joint. [2]

(b) Describe the action of antagonistic muscles in the straightening and bending of the arm. [4]

(c) Differentiate between the thoracic and lumbar vertebrae in human beings. [6]

[Total: 12]

10 **(a)** Describe the life cycle of a mosquito. [4]

(b) With reference to the disease bilharzia, discuss its .....

(i) signs and symptoms. [4]

(ii) method of transmission. [4]

[Total: 12]