

Candidate Name \_\_\_\_\_

Centre Number			Candidate Number						

# EXAMINATIONS COUNCIL OF ZAMBIA

Examination for General Certificate of Education Ordinary Level

## Biology

5090/2

### Paper 2 Theory

Tuesday

25 JULY 2017

**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 at the bottom right side corner.

**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.**

FOR EXAMINER'S USE	
Section A	
Section B	
<b>Total</b>	

**Section A Short answer questions [44 marks]**

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

- 1 (a)** Complete **Table 1.0** showing parts of a microscope and their functions.

<b>PART</b>	<b>FUNCTION</b>
<b>(i)</b>	Collects and reflects light onto specimen on the stage
Diaphragm	<b>(ii)</b>
<b>(iii)</b>	Magnifies the image further
Stage	<b>(iv)</b>
<b>(v)</b>	Brings the image into sharp focus especially when the specimen is being viewed at high magnification.

**Table 1.0**

[5]

- (b)** State **three** parts of a plant cell which can be easily seen under a light microscope.

**(i)** .....

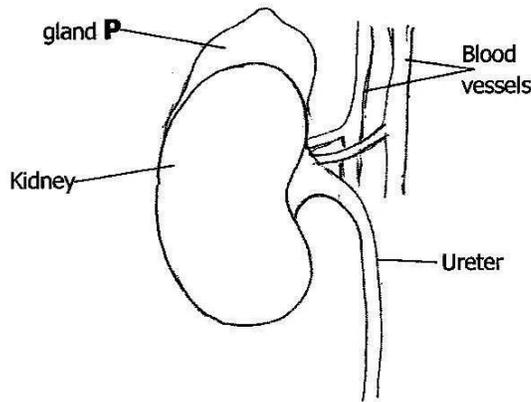
**(ii)** .....

**(iii)**.....

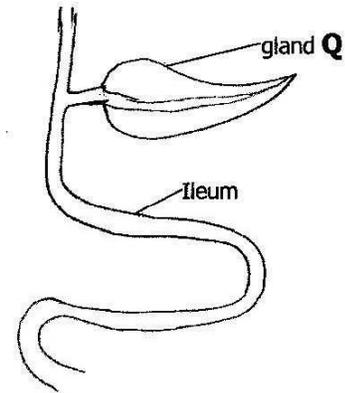
[3]

**[Total: 8 marks]**

2 **Figure 2.1** and **2.2** show two endocrine glands labelled **P** and **Q** respectively.



**Figure 2.1**



**Figure 2.2**

(a) (i) Identify the endocrine glands **P** and **Q**.

Gland **P** .....

Gland **Q** ..... [2]

(ii) State **one** hormone produced by each gland.

Hormone produced by gland **P** .....

Hormone produced by gland **Q** ..... [2]

(iii) Explain how the hormone produced by gland **P** stated in (a) (ii) above plays a role in coordination.

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

(b) Explain the other role played by gland **Q** apart from producing hormones.

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

**[Total: 9 marks]**

3 Figure 3.0 shows the muscles in a bent limb in a grasshopper.

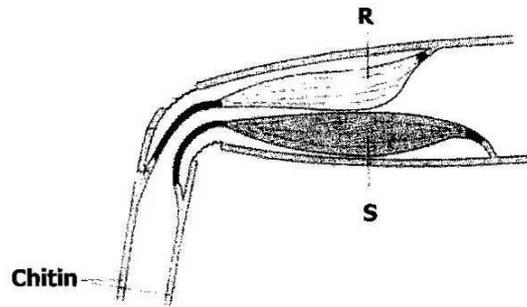


Figure 3.0

(a) Identify muscles **R** and **S**.

**Muscle R** .....

**Muscle S** ..... [2]

(b) In order to straighten the limb what happens to muscle **R** and **S**?

**Muscle R** .....

**Muscle S** ..... [2]

(c) State the term used to refer to the action of muscle **R** and **S**.

..... [1]

(d) Identify the type of skeleton shown in **figure 3.0**.

..... [1]

(e) State **three** functions of the skeleton in **figure 3.0**.

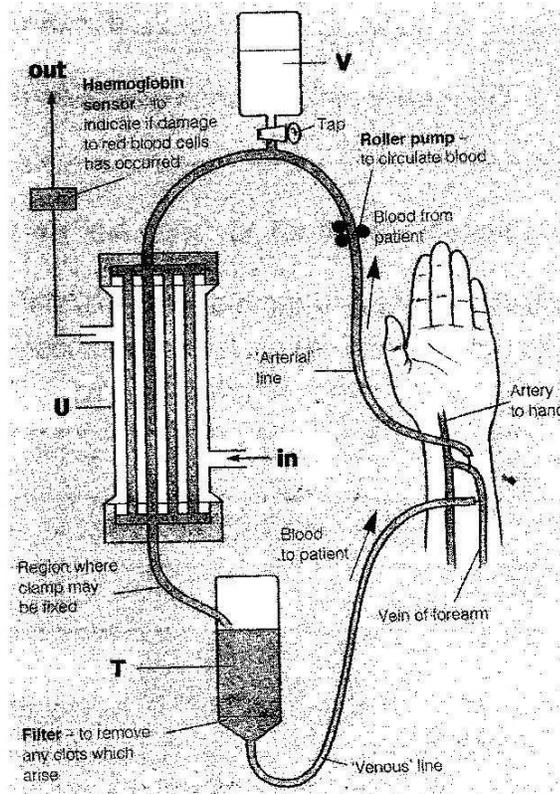
(i) .....

(ii) .....

(iii) ..... [3]

[Total: 9 marks]

- 4 **Figure 4.0** shows the process involved in using a dialysis machine by a patient suffering from kidney failure.



**Figure 4.0**

- (a) (i) Which of the labelled parts **V**, **U** and **T** is the dialysis machine?

..... [1]

- (ii) Which labelled parts, **V**, **U** and **T** removes gas bubbles to prevent air lock?

..... [1]

- (b) Suggest **two** reasons why both tubes, to and from the dialysis machine are connected to the vein and not the artery.

**1** .....

.....

**2** .....

..... [2]

- (c)** Explain how important nutrients like glucose, amino acids and salts are prevented from leaving blood in the dialysis machine.

.....  
.....  
.....  
.....

[2]

- (d)** State **two** disadvantages of using a dialysis machine by patients with kidney failure.

**(i)** .....  
.....  
**(ii)** .....  
.....

[2]

- (e)** Suggest **one** other method of treatment of kidney failure in a patient.

.....  
.....

[1]

**[Total: 9 marks]**

5 A pure breeding black bull was crossed with a pure breeding red cow. All the resulting offspring were black.

(a) Using letter **B** or **b** for alleles;

(i) Which allele was dominant for skin colour?

**Allele:** ..... [1]

(ii) What was the genotype for the parent black bull?

**Genotype:** ..... [1]

(b) Using a genetic diagram, show the resulting offspring if the offspring black bull was crossed with the parent red cow. [5]

(c) Suggest what could happen to the pure breeding black bull or red cow to cause them to produce a black and white offspring.

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

[Total: 9 marks]

[Turn over

**Section B Essay questions [36 marks]**

**Answer any three questions from this section. All answers must be in complete sentences and paragraphs.**

**6** Explain how the internal parts of a leaf are adapted for photosynthesis. [12]

**[Total: 12 marks]**

**7 (a)** Explain why

**(i)** Persons with blood group **AB** are referred to as universal recipients. [4]

**(ii)** A person with blood group **A** cannot donate blood to a person with blood group **B**. [4]

**(b)** Explain the importance of taking **named** precautions before blood transfusion can be done. [4]

**[Total: 12 marks]**

**8 (a)** Describe the production of adenosine triphosphate (ATP) during respiration. [3]

**(b)** Suggest ways in which respiration is important to living things. [3]

**(c)** Compare and contrast the respiratory surface of humans and fish. [6]

**[Total: 12 marks]**

**9 (a)** Explain the advantages and disadvantages of vegetative propagation. [5]

**(b)** Describe the process of fertilization in flowering plants. [7]

**[Total: 12 marks]**

**10 (a)** Using a pond as an example, describe the features of an ecosystem. [6]

**(b)** Explain the effect of agriculture on an ecosystem. [6]

**[Total: 12 marks]**

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