

Centre Number				Examination Number									

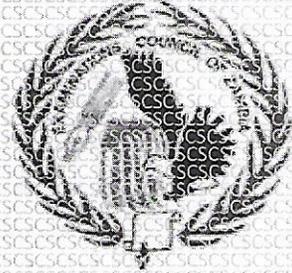


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# EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level



## Biology

## 5090/2

### Paper 2 Theory

2020

**Additional Materials:**

Answer Booklet

**Time: 1 hour 45 minutes**

**Marks: 80**

#### Instructions to Candidates

- Write the **centre number** and your **examination number** on every page of this question paper and on the separate **Answer Booklet** provided.
- 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:
  - fasten the Answer Booklet used securely to the question paper,
  - 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	
<b>Total</b>	

#### 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.**

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

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

**1** **Table 1** shows cells and tissues found in living things.

<b>Cells</b>	Red blood cell	Root hair cell	Palisade cell	Sperm cell
<b>Tissues</b>	Xylem tissue	Nerve tissue	Epidermal tissue	Muscle tissue

**Table 1**

- (a) From **Table 1**, identify
- (i) a plant cell,  
..... [1]
  - (ii) an animal cell,  
..... [1]
  - (iii) a tissue whose function is to cover and protect plants from mechanical damage and infections,  
..... [1]
  - (iv) a tissue whose function is to transport water and dissolved mineral salts in plants,  
..... [1]
  - (v) a cell found in the reproductive system.  
..... [1]
- (b) In which tissue are the following cells found?
- (i) Red blood cell  
..... [1]
  - (ii) Palisade cell  
..... [1]
- (c) Name **one** organ found in
- (i) a plant,  
..... [1]
  - (ii) an animal.  
..... [1]

[Total: 9]

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2 **Table 2** shows the concentration of various substances in blood plasma, glomerular filtrate and urine.

Substance	Concentration (%)		
	Blood plasma	Glomerular filtrate	Urine
Urea	0.04	0.04	2.0
Glucose	0.1	0.1	0.0
Salt	0.46	0.46	0.7
Protein	8.0	0.0	0.0

**Table 2**

(a) (i) Name the process responsible for the formation of glomerular filtrate.  
 ..... [1]

(ii) Which of the substances in **Table 2** above does **not** pass through the glomerulus during filtration?  
 ..... [1]

(iii) Give a reason for your answer in (a) (ii) above.  
 ..... [1]

(b) Explain why the concentration of urea in the glomerular filtrate is much less than the concentration of urea in urine.  
 ..... [2]

(c) Outline the internal structure of a kidney.  
 .....  
 .....  
 ..... [4]

**[Total: 9]**

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3 Figure 3 shows stages in the life cycle of a housefly.

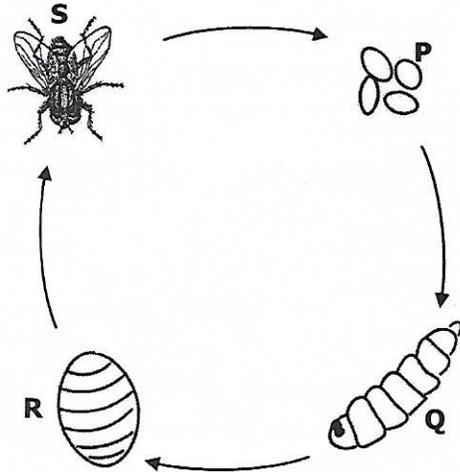
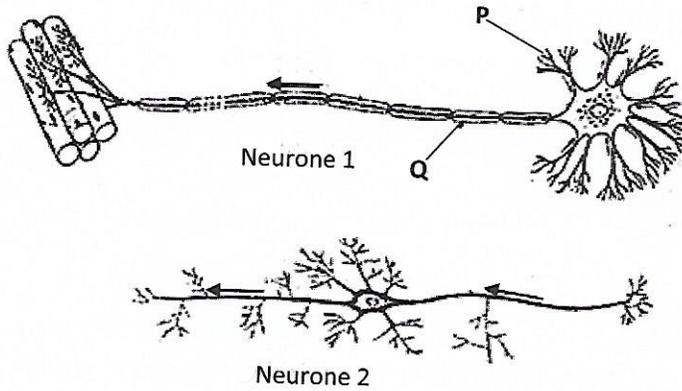


Figure 3

- (a) Identify stages P and R.
  - P .....
  - R ..... [2]
- (b) (i) Which stage is useful in the decomposition of matter?
  - ..... [1]
- (b) (ii) Which stage is involved in the spread of diseases?
  - ..... [1]
- (c) State **two** diseases in which a housefly is a vector.
  - 1.....
  - 2..... [2]
- (d) Explain how a mosquito is similar to a housefly in terms of
  - (i) life cycles,
    - ..... [1]
  - (ii) spreading of diseases.
    - ..... [1]
- (e) Explain **one** way by which a housefly can lead to the spread of cholera.
  - .....
  - ..... [1]

[Total: 9]

4 **Figure 4** shows structures of **two** neurones.



**Figure 4**

- (a) (i) Identify the **two** neurones shown in **Figure 4**.
- Neurone 1** .....
- Neurone 2** ..... [2]
- (ii) State the functions of parts **P** and **Q** in neurone **1**.
- P** .....
- .....
- Q** .....
- ..... [2]
- (b) (i) What do you understand by the term reflex action? [2]
- .....
- ..... [2]
- (ii) Give **one** example of a reflex action. [1]
- .....
- (iii) Describe the path taken by an impulse from the receptors to the effectors. [2]
- .....
- ..... [2]
- [Total: 9]**

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5 (a) (i) State the number of sex chromosomes in the nucleus of a somatic cell of the human body.

..... [1]

(ii) What is haemophilia?

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

(b) Using a genetic diagram, explain how normal parents for haemophilia can have a son who is haemophiliac. Use symbols  $X^H$  and  $X^h$  to represent the dominant and the recessive alleles respectively.

[5]

[Total: 8]

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

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

- 6** (a) Explain the stages involved in testing a piece of onion for reducing sugars. [6]
- (b) Explain the following nutritional disorders: [6]
- (i) Goitre,
- (ii) Kwashiorkor,
- (iii) Leaf chlorosis.
- [Total: 12]
- 7** (a) Describe the process of reproduction in a frog. [8]
- (b) Explain how reproduction in frogs differs from that in human beings. [4]
- [Total: 12]
- 8** Describe the components of blood and their functions. [12]
- [Total: 12]
- 9** (a) Explain the following types of growth with specific reference to plants: [8]
- (i) Primary growth,
- (ii) Secondary growth.
- (b) Explain the differences between tropisms and taxic responses in living organisms. [4]
- [Total: 12]
- 10** (a) Explain the following terms: [4]
- (i) abiotic factors in an ecosystem,
- (ii) niche.
- (b) Describe the key features of an ecosystem in a water body like lake, river or pond. [8]
- [Total: 12]