Centre Number	Candidate Number

Candidate Name _____

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology 5090/3

Paper 3 Practical Test

Additional Information:
As listed in Instructions to Supervisors

Time **1 hour 15 minutes**

Instructions to Candidates

Write your name, centre number and candidate number in the spaces provided at the top of this page.
There are **two** questions in this paper.
Answer **both** questions.
Write your answers in the spaces provided on the question paper.
Use sharp **HB** pencils for your drawings. Coloured pencils and crayons should not be used..

Information for candidates

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

Cell phones are not allowed in the examination room.

FOR EXAMINER'S USE	
1	
2	
Total	

Answer both questions

1 **E16** is an arrangement representing an ecosystem consisting of biotic and abiotic factors.

(a) Name any **two** biotic components in **E16** and state their roles.

(i) **1.** Name: ..... [1]

2. Role: ..... [1]

(ii) **1.** Name: ..... [1]

2. Role: ..... [1]

(iii) State any **two** abiotic components you can see in **E16.**

1. ..... [1]

2. ..... [1]

(b) **(i)** Describe the importance of having a variety of living things in **E16.**

.....

..... [1]

(ii) What would happen if the biotic components were removed from **E16**?

.....

..... [2]

(c) **(i)** Using organisms in **E16**, construct a food chain to illustrate feeding relationships that exist within an ecosystem.

[3]

(ii) Classify each organism in the food chain in **(c) (i)** above according to their trophic levels.

.....

.....

..... [3]

(iii) Name any **two** physical factors in **E16** which are not directly observable but influence the activities of the setup in **E16**.

.....

..... [2]

(iv) State any **three** economic reasons for maintaining biodiversity in the ecosystem.

1. .....

2. .....

3. ..... [3]

Total 20 marks

2 You are provided with specimens **W70** and **W71**. Specimen **W70** is homozygous tall and **W71** is homozygous short. Tallness is controlled by a dominant gene **(T)** while shortness is controlled by a recessive gene **(t)**.

(a) A monohybrid cross was carried out between **W70** and **W71**.

(i) State the phenotype of

1. W70 ..... [1]

2. W71 ..... [1]

(ii) Determine the genotype of the F_1 generation.

..... [1]

(iii) Determine the phenotype of the F_1 generation.

..... [1]

(b) The F_1 offspring were allowed to inbreed.

(i) Determine the phenotype of the F_2 generation.

..... [2]

(ii) Determine the genotype of the F_2 generation.

..... [3]

(iii) Determine the phenotypic ratio of the F_2 generation.

..... [1]

(c) You are provided with two dwarf plants labeled as specimens **C** and **D**. Dwarfness is controlled by a recessive gene, **t**.

(i) State the genotype of the parent plant **C**.

..... [1]

(ii) Determine the phenotype of the F_1 generation formed from a cross between **C** and **D**.

..... [1]

(iii) Illustrate using a genetic diagram how the F_1 offspring in **(c)(ii)** above are formed.

[7]

(iv) State **one** disadvantage of the type of breeding shown by **C** and **D**.

.....

..... [1]

Total 20 marks