**FORM 3 BIOLOGY APRIL HOLIDAY ASSIGNMENT - APRIL 2023**

1. Study the following food web and answer questions that follow:

Insectivorous birds

PLANTS

slugs

frogs

Caterpillars

Aphids

mice

Beetles

Hawks

Snakes

(a) (i) Name the organisms that occupy the second trophic level

(ii) What is the other name for the second trophic level

(b) Write down **two** food chains from the food web that:

(i) End with hawks as tertiary consumer

(ii) End with hawks as quaternary consumer

(c) Giving reasons state;

(i) the organism with largest biomass

(ii) the organism with least biomass

1. In a certain school Form three class did an experiment to estimate the number of Tilapia

in their fish pond. 725 tilapia were netted marked and released.

a) State the method used in this exercise

b) Calculate the tilapia population.

c) State **two** assumptions made by the students during the investigation

3. An investigation was carried out on a terrestrial ecosystem. The population sizes and species

biomass were determined and recorded as shown in the table

|  |  |  |
| --- | --- | --- |
| **SPECIES** | **POPULATION SIZE** | **SPECIES BIOMASS** |
| **A** | 1x103 | 1x103 |
| **B** | 1x103 | 1x10-1 |
| **C** | 1x105 | 1x10 |
| **D** | 1x10 | 1x104 |

1. If these organisms had a feeding relationship, construct a simple food chain involving all the organisms
2. Construct pyramid of numbers using the data provided above

State **one** disadvantage of using pyramid of number in expressing feeding relationships in

1. In an ecological study, a locust population and that of crows was estimated in a grassland area

over a period of one year. The results were tabulated as shown below.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Months** | **J** | **F** | **M** | **A** | **M** | **J** | **A** | **S** | **O** | **N** | **D** |
| **No. of Adult locusts x 102** | 90 | 20 | 11 | 25 | 200 | 652 | 15 | 10 | 35 | 192 | 456 |
| **Number of crows** | 4 | 2 | 0 | 1 | 8 | 22 | 2 | 1 | 1 | 5 | 15 |
| **Amount of rainfall** | 20 | 0 | 55 | 350 | 520 | 350 | 10 | 25 | 190 | 256 | 350 |

a) Draw a graph of population of locusts and crows against time

b) i) State the relationship between rainfall and locust population

ii) Account for the relationship you have stated in **b (i)** above

c) What happens on the populations of locusts and crows in the months of January to March?

Give a reason.

d) If the area of study was one square kilometer, state **one** method used to estimate the

population of :- i) Locusts

ii) Crows

(e) (i) State the trophic levels of the (i) Locusts and (ii) crows

(ii) Construct a simple complete food chain involving these organisms

(f) If the locust were removed from the food chain, what would be its effect?

(g) Define **biomass**