Bergvliet High School



GRADE 8

NATURAL SCIENCES: BIOLOGY

14th November 2024

MARKS: 60 **MEMO** **TIME: 1 hour**

EXAMINER: M. Brouwer

MODERATOR/S: S. Lambrechts, G. O'Connor and M. Wentworth,

Name:		**Teacher:** **Br / La / Oc / We**
Question 1		**15**
Question 2		**30**
Question 3		**15**
Total		**60**
Percentage		**%**
Signature		

INSTRUCTIONS

Read the instructions carefully before answering the questions (**9 pages in total**):

1. Answer all the questions in pen, on this question paper.
2. Write neatly and legibly.
3. All diagram rules should be followed.
4. The diagrams in this paper may not necessarily be drawn to scale.
5. Tippex may not be used.
6. Work quickly**,** neatly and carefully.

QUESTION 1

1.1. **Various possible answers are provided for each question. Write only the LETTER of the correct answer in the answer block provided.**

1.1.1. Which is NOT an abiotic factor?

C ✓✓

A. Sunlight

B. Rock

C. Fungus

D. Temperature

1.1.2. Ecology is studied at different levels of interactions between living things and their non-living environment. Choose the correct order of **levels** from the **lowest** to the **highest** level.

D ✓✓

A. Biosphere, ecosystem, community, population, individual.

B. Individual, community, population, ecosystem, biosphere.

C. Biosphere, community, ecosystem, population, individual.

D. Individual, population, community, ecosystem, biosphere.

1.1.3. Which of the following options is NOT a natural factor that upsets the balance in ecosystems?

A ✓✓

A. Pollution

B. Droughts

C. Floods

D. Extreme temperatures

1.1.4. Which organism is considered an omnivore?

B ✓✓

A. Lion

B. Baboon

C. Chameleon

D. Wildebeest

1.1.5. Some consumers feed off the remains of carcasses of animals and are known as:

C ✓✓

A. Predators

B. Insectivores

C. Scavengers

D. Herbivores (2 x 5) /10/

1.2. **Give the correct biological term for the following:**

1.2.1. The variety of living organisms in an ecosystem.

Biodiversity ✓

1.2.2. Consumers that hunt other organisms for food.

Predator ✓

1.2.3. The interactions between individuals of different species.

Symbiosis ✓

1.2.4. A group of organisms belonging to the same species living in a particular area.

Population ✓

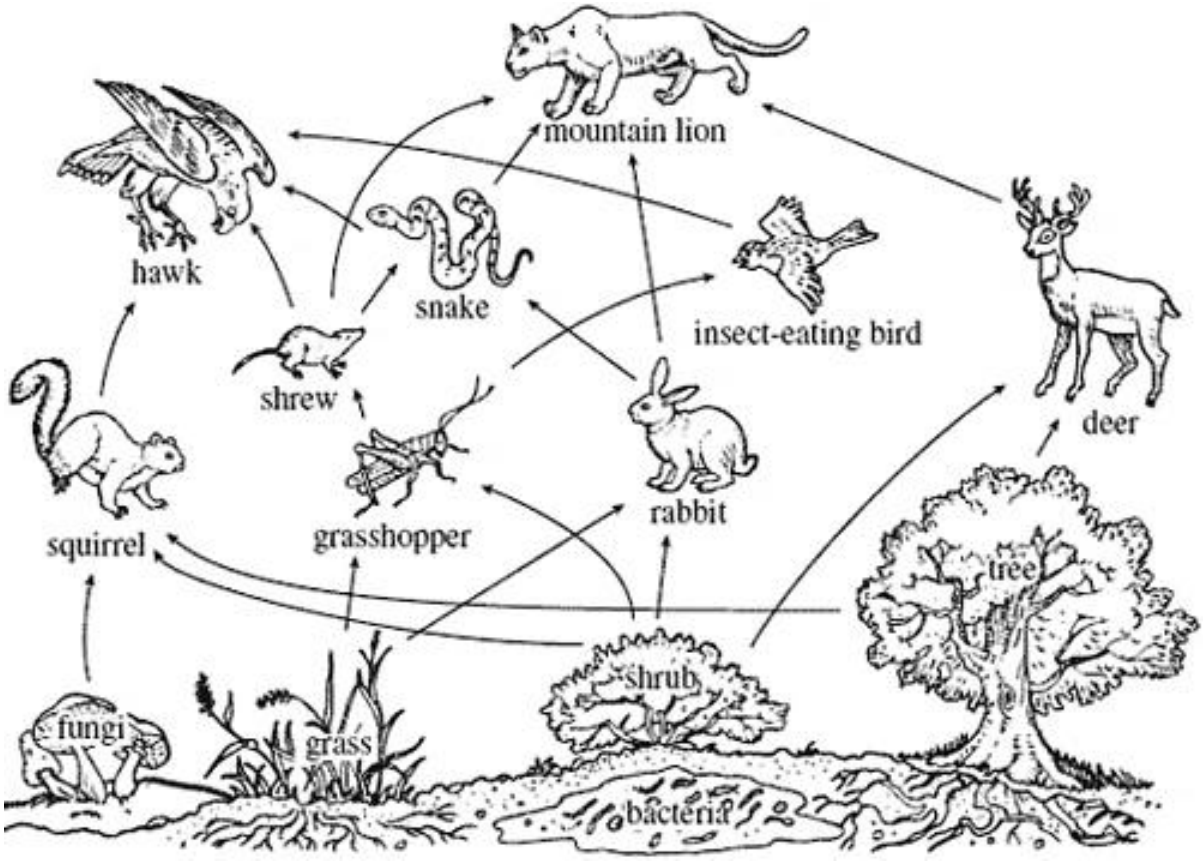
1.2.5. A form of trickery organisms use to fool predators into thinking they are more dangerous than they are.

Mimicry ✓ /5/

[15]

QUESTION 2

2.1. Study the food web below and answer the questions that follow.



2.1.1. Identify and construct ONE food chain, from the food web above, containing FOUR organisms. (Any correct food chain with 4 organisms depicted in **this** food web)

grass ✓ →✓ rabbit ✓ → snake ✓ → hawk ✓ (5)

2.1.2. What do the arrows in the food web represent?

direction of flow of energy ✓ (1)

2.1.3. From the food web, identify ONE: (**Mark the first ONE only**)

a) producer grass / shrub / tree ✓

b) primary consumer squirrel / grasshopper / rabbit / deer ✓

c) secondary consumer shrew / hawk /snake/ lion / bird ✓

d) tertiary consumer hawk / snake/ lion ✓

e) decomposer fungi / bacteria ✓ (5)

2.1.4. If all the rabbits in this ecosystem are poached (hunted and killed), explain the effect this would have on the number of mountain lions.

The number of mountain lions would decrease ✓ because they lose their food source ✓ (2)

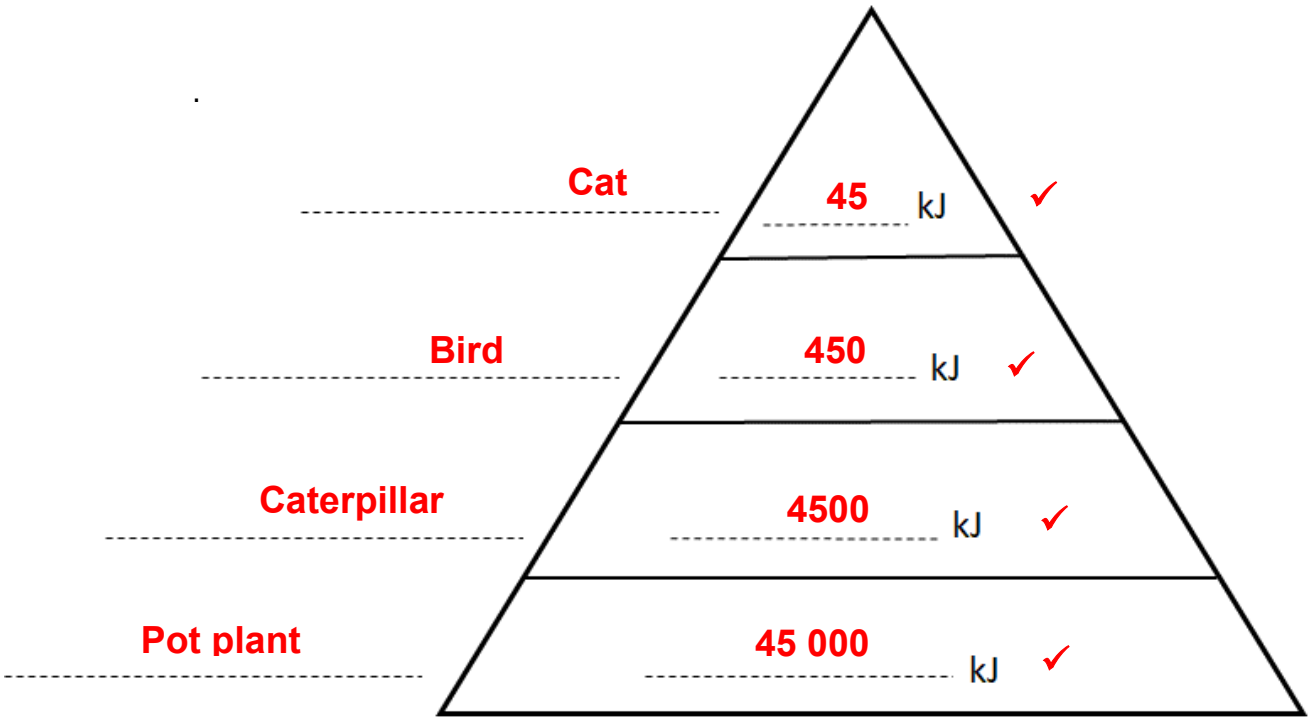
2.1.5. Apart from poaching, humans also upset the balance of ecosystems through habitat destruction. Name THREE human activities that cause habitat destruction.

Deforestation ✓ / dams ✓/ mining ✓ / farming

(Mark the first THREE only) (3)

2.2. Energy received from the sun is used to make food for a pot plant and gives the plant **45 000kJ** of energy. Complete the energy pyramid below using the following organisms to show how much energy is passed on to each feeding level: **Caterpillar**, **Pot Plant**, **Cat**, **Bird**

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(4)

/20/

2.3. Study the diagram below.



2.3.1. Name the **type** of symbiosis shown in the diagram.

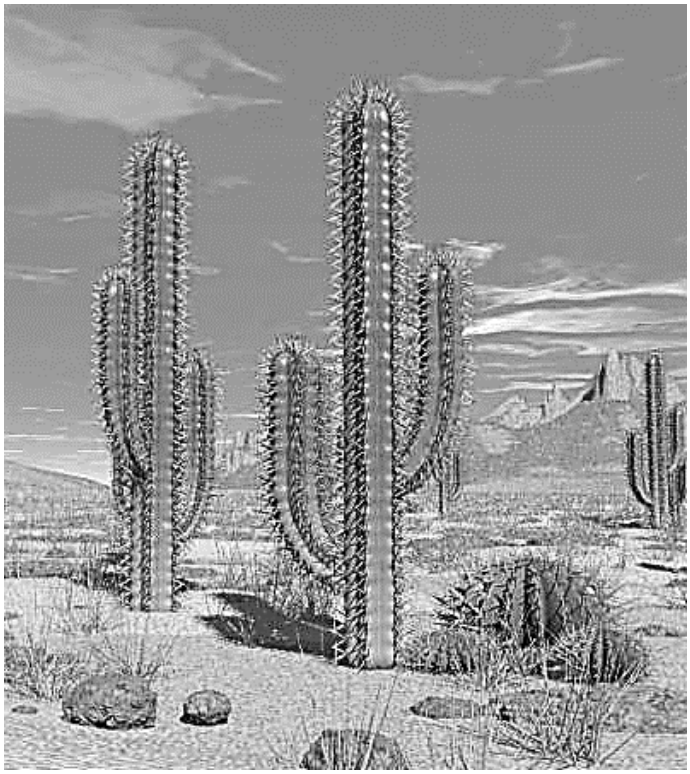
Commensalism ✓ (1)

2.3.2. Explain your answer above, by describing the relationship between the whale and the barnacles.

The whale is unaffected ✓ while the barnacle can be mobile ✓ and transported to new food sources ✓ (3)

/4/

2.4. Study the diagram of the cactus below.



2.4.1. Explain THREE adaptations of the cactus that help it to survive life in the desert.

1. No leaves ✓ very little water is lost ✓
2. Stores water in its thick stem ✓ to survive long periods without water ✓
3. Shallow, widespread roots ✓ to quickly take up water when there is rainfall ✓

   OR

   Sharp spines ✓ to prevent herbivores from eating it ✓

(**Mark the first THREE explained only**) (3 x 2) /6/

[30]

QUESTION 3

3.1. Bob performed an investigation to determine the effect of light intensity on the opening of flower buds in a particular species of plant known as Watsonias.

He built four outside enclosures for the Watsonias. The first one was covered with one layer of green shade cloth. The second one was covered with two layers, the third one with three layers and the fourth one with four layers.

Watsonias flower in spring to early summer so Bob did his experiment in October with flowers that he bought from the nursery.

In each enclosure, Bob put five identical pots of Watsonias. Each pot had a single Watsonia plant, which was 20 cm high and had no open flowers. Each enclosure was placed on his lawn in full sun. At the end of each week, he counted the total number of flowers open in each enclosure and recorded his results.

His results are show in the table below.

Number of flower buds opening on Watsonia plants in four different enclosures over four weeks in October

Enclosure No.	Week 1	Week 2	Week 3	Week 4
1 (25% shade)	4	7	17	29
2 (50% shade)	2	5	9	15
3 (75% shade)	0	3	4	7
4 (100% shade)	0	0	0	3

3.1.1. State the aim of this investigation.

To determine the effect of light intensity on the opening of flower buds in a particular species of plant known as Watsonias. ✓ (1)

3.1.2. Identify the:

a) independent variable: light intensity ✓ (1)

b) dependent variable: opening of flower buds ✓ (1)

3.1.3. State a hypothesis for this investigation.

The higher the light intensity ✓ the more flower buds will open ✓

OR

The lower the light intensity ✓ the more flower buds will open ✓ (2)

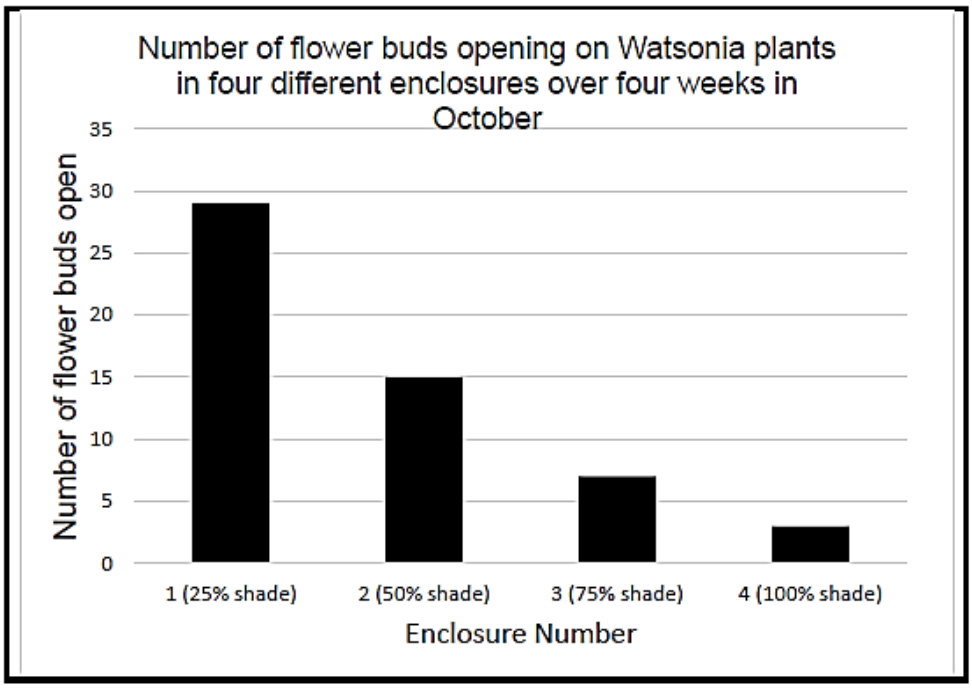
3.1.4. Provide TWO ways in which the reliability of this investigation can be improved.

1. Repeat the investigation ✓
2. Increase the sample size ✓ (2)

3.1.5. Sate TWO fixed / constant variables.

1. Each enclosure had five identical pots of Watsonias ✓ /
2. Each pot had a single Watsonia plant ✓ /
   20 cm high ✓ / no open flowers ✓ / full sun ✓ (**Mark the first TWO only**) (2)

3.1.6. Draw a **bar graph** showing the number of flower buds opening in the four different enclosures in week **4** only.



Mark Allocation

Type **T**	✓
Caption **C**	✓
Label (X and Y) **L**	✓
Scale **S**	✓
Plotting **P**	1–3 bars correct ✓
	All bars correct ✓✓

(6)
[15]
Total Marks: 60

Spare graph paper for question 3.1.6. if necessary.

