KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING

GRADE 8

NATURAL SCIENCES
PLC CONTROLLED TEST
2026 TERM 1

Time: 1½ Hours
Marks: 60

Instructions and Information

1. You must **answer all the questions**.
2. Read the instructions carefully, and answer questions as instructed.
3. Number your answers exactly as the questions are numbered.
4. Write neatly and legibly.

NB. This question paper consists of **7 pages excluding the cover page,** and contains **5 questions**.

SECTION A

QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A - D) next to the question number (1.1.1 1.1.5) in the ANSWER BOOK, eg 1.1.6 A

1.1.1 Which of the following is NOT an example of poaching?

A. Keeping tortoises as pets.
B. Removing cycads (ancient plants) from a nature reserve.
C. Killing rhino for their horns.
D. Slaughtering cows on a farm. (1)

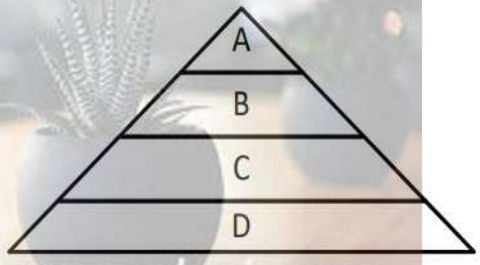
1.1.2 Which one of the following causes Tuberculosis in humans?

A. Protista
B. Bacteria
C. Fungi
D. Virus (1)

1.1.3 Ecology is ….

A. a combination of all ecosystems.
B. the study of the interactions of organisms with each other and their physical and chemical environment.
C. a community of animals, plants and people.
D. a group of people that stays in one place that has a specific common characteristic. (1)

1.1.4 Study the ecological pyramid diagram below:

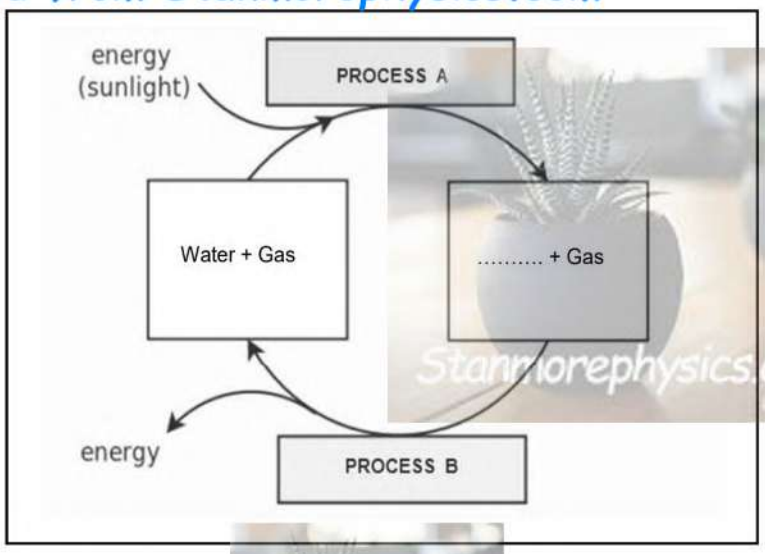


Which TWO letters represent carnivores.

A. A and B
B. A and C
C. A and D
D. B and C

(1)

1.1.5 Study the diagram below:



Which processes are represented by A and B respectively?

	PROCESS A	PROCESS B
A	Photosynthesis	Transpiration
B	Respiration	Photosynthesis
C	Photosynthesis	Respiration
D	Transpiration	Photosynthesis

(1)

(5)

1.2 Give ONE **word/term** for each of the following statements. Write only the word/term next to the question number.

1.2.1 Organism that cannot make their own food and must consume other organisms. (1)

1.2.2 Medicine used to treat bacterial infections. (1)

1.2.3 When all the individuals of a species die out. (1)

1.2.4 A live animal that is hunted. (1)

1.2.5 Living objects that are too small to view with the naked eye and can only be observed through a microscope. (1)

(5)

1.3 Indicate whether each of the descriptions in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A and B** or **NONE** of the items in COLUMN II. Write A only, B only, both A and B or NONE next to the question number.

COLUMN I	COLUMN II
1.3.1 A certain plant requires moisture, oxygen, carbon dioxide, light and minerals to survive. This statement shows that living organisms depend on…	A: Symbiotic relationships B: Abiotic components
1.3.2 Example of micro-organism	A: Bacteria B: Fungi
1.3.3 The source of energy in an ecosystem.	A: Plants B: Sun

(3)

1.4 The format below represents reactants and products in a chemical reaction.

A + B → C + D

1.4.1 Replace the letters with a suitable word equation that represents photosynthesis. (4)

1.4.2 Why plants cannot photosynthesise at night? (1)

1.4.3 Explain why the process of photosynthesis is necessary in order for humans to survive. (2)

(7)

[20]

SECTION B

QUESTION 2

The picture below shows the results of an investigation into how glucose concentration affects the rate of cellular respiration. The rate of cellular respiration was measured by measuring the amount of gas produced as shown below. The picture shows how some of the experimental apparatus were set up.

The table below shows the results of the experiment.

Amount of glucose added (ml)	Circumference of balloon (cm) (Indicating the rate of respiration)
0	5
1	8
2	12
5	19
10	22

2.1 Write an investigative question for this experiment. (1)

2.2 Identify the independent variable. (1)

2.3 Identify the dependent variable. (1)

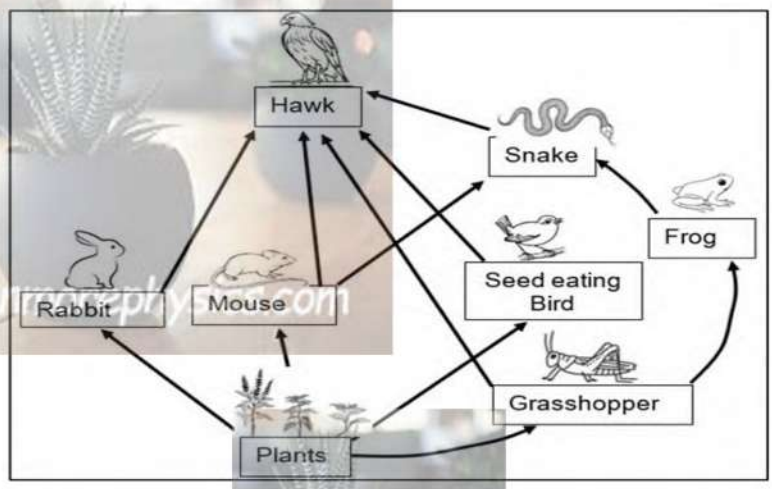
2.4 What conclusion can be drawn from the results of this experiment? (2)

2.5 Why is respiration necessary to support life on Earth? (1)

(6)

QUESTION 3

Study the diagram below and answer the questions that follow.



3.1 What does the diagram above represent? (1)

3.2 Name an organism from the diagram above which is an example of a:

A. Carnivore (1)

B. Producer (1)

C. Secondary consumer (1)

3.3 What do the arrows in the diagram represent? (1)

3.4 Referring to the feeding relationships, name ONE factor that can lead to an INCREASE in the snake population. (1)

3.5 Define *biodiversity.* (1)

3.6 Explain the consequences to the biodiversity of the ecosystem above, if the natural plants were replaced with a single species crop, such as wheat. (3)

3.7 List TWO abiotic factors that would create a suitable habitat for the frog. (2)

(12)

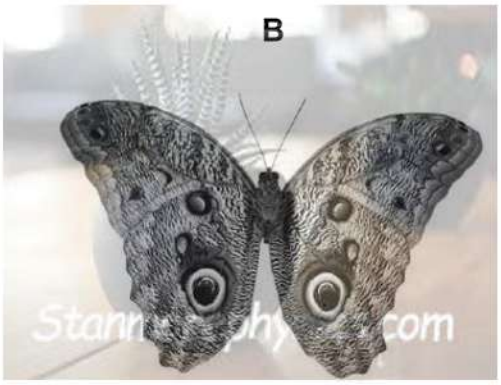
QUESTION 4

4.1 Study the pictures of the animals below.

A

The Philippine Leaf insect

B



The Owl butterfly

4.1.1 Define the term *adaptation*. (1)

4.1.2 Identify the type of adaptation in picture A. Choose between STRUCTURAL, FUNCTIONAL or BEHAVIOURAL. Give a reason for your answer. (2)

4.1.3 State whether the Owl butterfly demonstrates an example of MIMICRY or CAMOUFLAGE. Give a reason for your answer. (2)

4.2 Read the CASE STUDY below and answer the questions.

Water Thieves (shortened) Forty-four, that's the critical double-digit number that's come out of a small but significant study site at Two Streams in the misty grasslands of the KwaZulu-Natal Midlands. This study has confirmed what scientists have long suspected about many of the alien trees growing rampant in parts of the country. Black wattle is one of numerous woody tree species introduced into South Africa to beautify gardens. Mostly from Australia, some alien species have found environmental conditions here ideal with no natural diseases or pests to keep their numbers in check. They have spread into the wild veld, becoming pesky weeds and then full-blown invaders. To understand precisely how much water they use, researchers set up a thorough, long- term monitoring process. After 13 years, the data was clear: dense thickets of mature black wattles drew 44% more water out of the catchment than grasslands, depriving the stream of that volume of water.

This is significantly more water than indigenous grass or river-edge bush would use, and far too high a number in our water-scarce country. But why do they use so much water? They grow much taller than indigenous bush and have extensive root systems. They grow deep into the underground water supply. Because they have wider canopies, with more leaves than many local species, they're transpiration factories, sucking water out of the soil and breathing it out into the surrounding air. This means that there is less moisture in the soil to maintain the health and well-being of indigenous species.

The environmental decay that comes with this sort of invasion is like a form of pollution. But unlike an oil spill or litter dumped in the veld, this form of pollution self-replicates. Once these invasive species have gained enough momentum, they keep on spreading. Black wattle seeds, for instance, can remain viable in the soil for up to half a century. Many of the invasive species change the chemical make-up of the soil. Black wattles, for instance, load the soil with nitrogen, impacting on threatened grassland species that thrive on low nitrogen soils and modifying the environment for other invaders.

Source: hpps://www.sanbi.org/node/10660

4.2.1 What is meant by *alien species*? (1)

4.2.2 Why was the Black wattle tree introduced into South Africa? (1)

4.2.3 Explain why the Black wattle tree absorbs more water than indigenous grass or river-edge bush. (2)

4.2.4 Discuss how Black wattle trees cause an imbalance in the grassland ecosystem and what impact this might have on the local wildlife in the affected areas. (3)

(12)

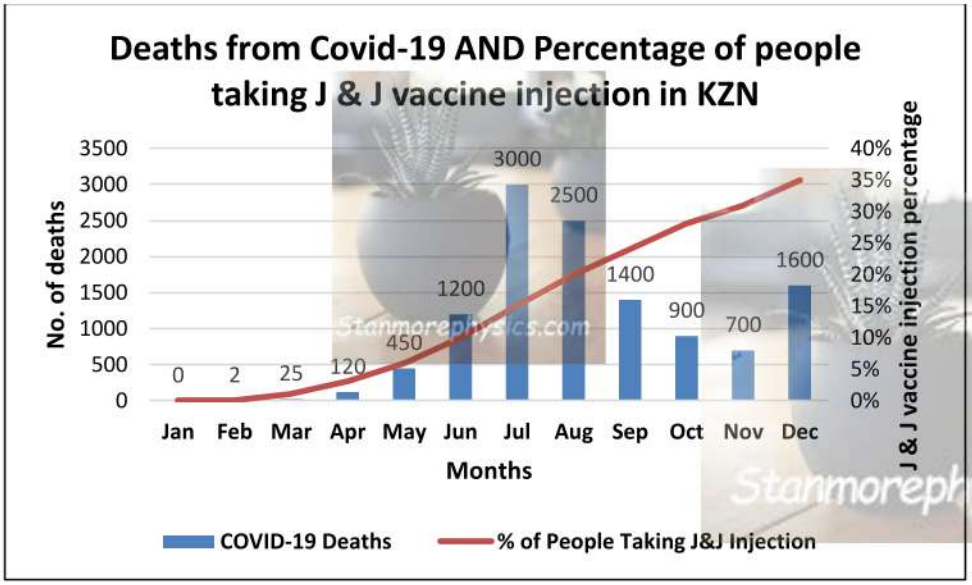
QUESTION 5

5.1 Define *micro-organisms.* (1)

5.2 In the 19th century a French scientist developed a method that prevents milk, beer and wine from causing illness in humans. What is this method called? (1)

5.3 Which type of micro-organism is used in the production of yoghurt? (1)

5.4 The graph below shows the hypothetical total number of deaths from Covid-19 and the percentage of people taking Johnson and Johnson vaccination injection in KZN (in 2020)



5.4.1 What type of micro-organism causes Covid-19? (1)

5.4.2 Which month recorded the highest number of deaths from Covid-19? (1)

5.4.3 From the data provided, briefly explain why the number of people dying from Covid-19 started declining between August and November (2)

5.5 Identify the independent variable from the graph (1)

5.6 Identify the dependent variable from the graph (1)

5.7 Why was there a peak in death rate during the month of December? (1)

(10)

[40]

TOTAL MARKS: [60]

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AMENDED MARKING GUIDELINES
2026 TERM 1

Time: 1½ Hours

Marks: 60

NB: These Marking Guidelines consists of 4 **pages** excluding cover page.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for, but descriptions are given**
   Accept if the differences/similarities are clear.

5. **If tabulation is required, but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotations when descriptions are required**
   Learners will lose marks.

7. **If flow charts are given instead of descriptions**
   Learners will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation, but credit the rest of the answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions, but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept, provided it was accepted at the national memo discussion meeting.

14. **If only the letter is asked for, but only the name is given (and vice versa)** Do not credit.

15. **If units are not given in measurements**
    Learners will lose marks. Memorandum will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated in a different way.**

SECTION A

QUESTION 1

1.1

1.1.1 D ✓ (1)

1.1.2 B ✓ (1)

1.1.3 B ✓ (1)

1.1.4 A ✓ (1)

1.1.5 C ✓ (1)

(5x1) **(5)**

1.2

1.2.1 Consumers ✓ (1)

1.2.2 Antibiotics ✓ (1)

1.2.3 Extinction ✓ (1)

1.2.4 Prey ✓ (1)

1.2.5 Micro-organism ✓ (1)

(5x1) **(5)**

1.3

1.3.1 B only ✓ (1)

1.3.2 Both A and B ✓ (1)

1.3.3 B only ✓ (1)

(3x1) **(3)**

1.4

1.4.1 Carbon dioxide ✓ + Water ✓ → Glucose ✓ + Oxygen ✓ (4)

1.4.2 Sunlight is absent / Plants need sunlight to photosynthesize. ✓ (1)

1.4.3 Provides the oxygen we breathe✓ and the food we eat ✓. (2)

(7)

SECTION A TOTAL **[20]**

SECTION B

QUESTION 2

2.1 Accept any relevant answer, e.g.:

- What is the relationship between the amount of glucose and rate of respiration? ✓

  OR
- What is the effect of the amount of glucose on the rate of respiration?
- Will an increase in the amount of glucose cause an increase in the rate of respiration? (1)

2.2 Amount of glucose ✓ (1)

2.3 Rate of Respiration ✓ (1)

2.4 As the amount of glucose increases✓, the rate of respiration increases ✓ (2)

2.5 Any relevant answer, e.g.:

- Respiration releases energy from food, which is used by living organisms.✓

  OR
- It provides carbon dioxide that is used by the plants during photosynthesis. (1)

(6)

QUESTION 3

3.1 Food web ✓ (1)

3.2 A. Hawk/snake/frog ✓ **(Any ONE correct answer)**

B. Plants ✓

C. Hawk/snake/frog ✓ **(Any ONE correct answer)** (3)

3.3 Flow of energy ✓ in an ecosystem. (1)

Or

Direction of flow of energy ✓

3.4 Accept any relevant answer, e.g.:

- Removal of Hawk species that feed on snakes. ✓

  OR (1)
- An increase in the populations of mice or frogs.

3.5 The variety of life on Earth. ✓

OR

The abundance of different species living within a particular region. (1)

3.6 The biodiversity would DECREASE. ✓

- Different animals rely on different food sources / plants. ✓A large variety of plants are necessary to support a large variety of different animals as they do not all eat the same type of plants. ✓

OR

- Only the animals that eat that single species of crop will be able to survive in that area. (3)

3.7 Water,✓ Air,✓ or Soil ✓, Correct temperature ✓, Moderate to low light intensity. ✓ (2)

(Any TWO correct answers) **(12)**

QUESTION 4

4.1

4.1.1 Biological process through which an organism becomes better suited to its environment. ✓ (1)

4.1.2 STRUCTURAL ✓

The Philippine leaf insect blends into it's environment as it looks similar to a leaf. ✓ (2)

4.1.3 MIMICRY ✓

Patterns on the Owl butterfly's wings resemble the eyes of an owl or another large animal, which scares predators away. ✓ (2)

4.2

4.2.1 An animal or plant that has been introduced into a country that it does not originate from. ✓ (1)

4.2.2 To beautify gardens. ✓ (1)

OR Provide firewood ✓

4.2.3 Accept any TWO relevant answers, e.g.:

- They grow much taller than indigenous bush. ✓
- They have extensive root system. ✓

OR

- Grow deep into the underground water supply. ✓ (2)

- Have wider canopies with more leaves than many local species they are transpiration factories. ✓

4.2.4 Black wattles load soil with nitrogen ✓ impacting on threatened grassland species that thrive on low nitrogen soils ✓and modifying the environment for other invaders. Indigenous plants will not survive and eventually die. ✓ (3)
OR Decline in population ✓

(12)

Question 5

5.1 Microscopic organisms that are too small to be seen with the naked eye✓. (1)

5.2 Pasteurization✓ (1)

5.3 Bacteria ✓ (1)

5.4

5.4.1 Virus ✓ (1)

5.4.2 July ✓ (1)

5.4.3 Vaccination coverage increased, ✓ more people received the vaccine, which helped reduce severe illness and deaths. ✓ (2)

OR

Improved public health measures, measures such as mask-wearing, social distancing, and better treatment in hospitals helped lower death rate.

*(**Any ONE correct answer**)*

5.5 Months ✓ (1)

5.6 Number of deaths / percentage of people vaccinated✓ (1)

5.7 The December peak in death rate happened because infections earlier in the period led to delayed deaths ✓

OR

Increased social interactions during the festive season.

(Any ONE correct answer) (1)

(10)

SECTION B TOTAL [40]

TOTAL MARKS: [60]