



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

LIFE SCIENCES

FORMAL TEST 2

10 SEPTEMBER 2024

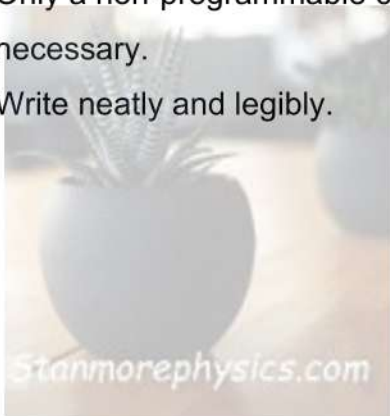
MARKS: 60

TIME: 1 HOUR

This question paper consists of 09 pages

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions
2. Write ALL the answers in the ANSWER BOOK.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Present your answers according to the instructions of each question.
5. Do ALL drawings in pencil and label them in black or blue ink.
6. Draw diagrams or flow charts only when asked to do so.
7. The diagrams in this question paper are NOT necessarily drawn to scale.
8. Do NOT use graph paper.
9. Only a non-programmable calculator, protractor and a compass must be used where necessary.
11. Write neatly and legibly.



SECTION A**QUESTION 1**

1.1 Various options are provided as possible answers to the following questions.

Choose the correct answer and write only the letter (**A to D**) next to the question number (**1.1.1 to 1.1.4**) in the ANSWER BOOK, e.g. 1.1.6 B

1.1.1 Large communities of organisms that form ecosystems with similar features are referred as a:

- A Ecosystem
- B Biosphere
- C Community
- D Biomes

1.1.2 What do we call scientists who studies fossils and the history of life on Earth?

- A Astronomers
- B Geographers
- C Palaeontologist
- D Geophysicists



1.1.3 Organisms that live in water are called:

- A Buoyant
- B Aquatic
- C Motile
- D Terrestrial



1.1.4 The following are found in an ecosystem:



- (i) Plant population
- (ii) Community
- (iii) Animal population
- (iv) Soil
- (v) Abiotic environment

Which of the following pairs make up an ecosystem?

- A (i) and (ii)
- B (iii) and (iv)
- C (iii) and (ii)
- D (iv) and (v)

(4 x 2) (8)

1.2 Give the correct biological term for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.4)

- 1.2.1 A group of individuals of the same species. (1)
- 1.2.2 The gradual movement of landmasses over extended periods of time. (1)
- 1.2.3 Components relating to non-living part of an environment. (1)
- 1.2.4 The specific position and role of an organism in an ecosystem. (1)

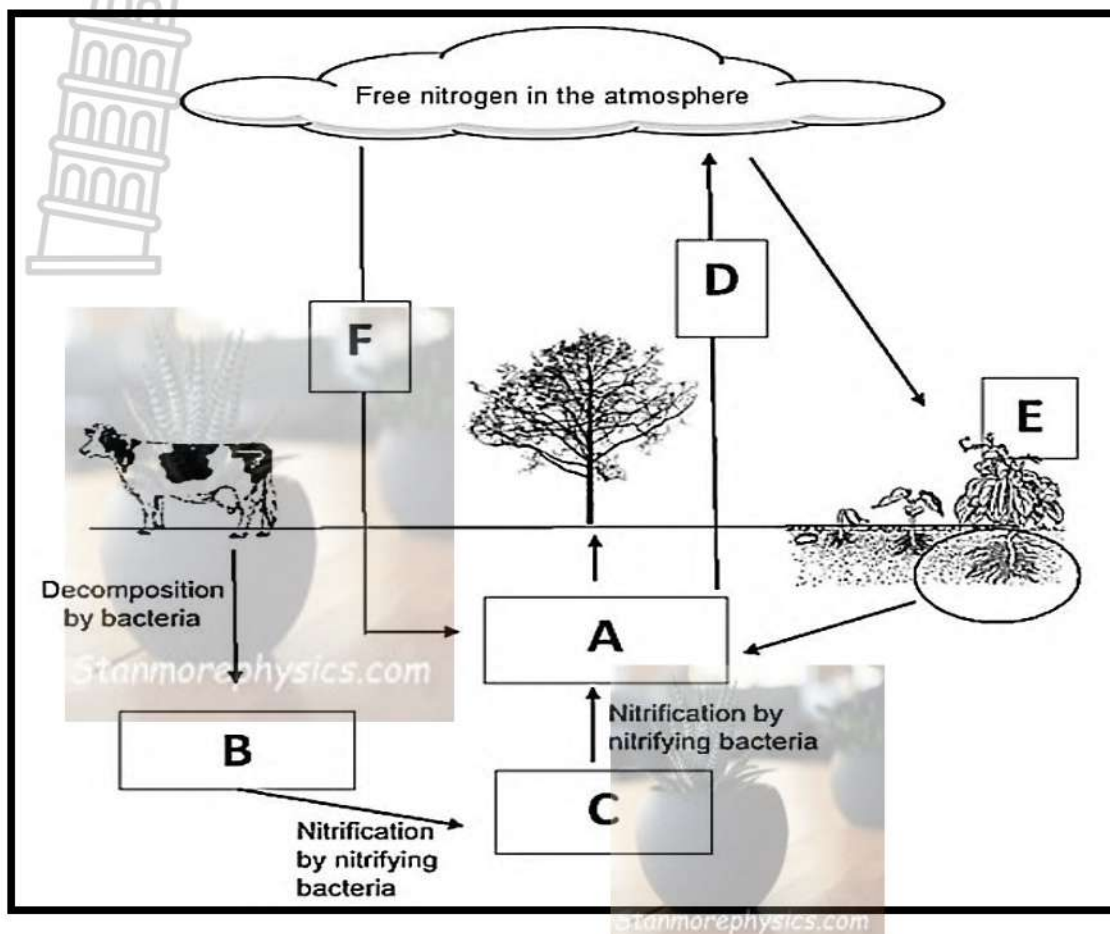
(4 x 1) (4)

1.3 Indicate whether each of the statements in COLUMN 1, 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.

COLUMN 1		COLUMN II
1.3.1	A group of the same species that can interbreed and produce fertile offspring.	A: Community B: Population
1.3.2	This biome exhibits the greatest diversity of plant species	A: Tropical rain forest B: Deciduous forest

(2 x 2) (4)

1.4 Study the diagram showing the nitrogen cycle below and answer the questions that follow.



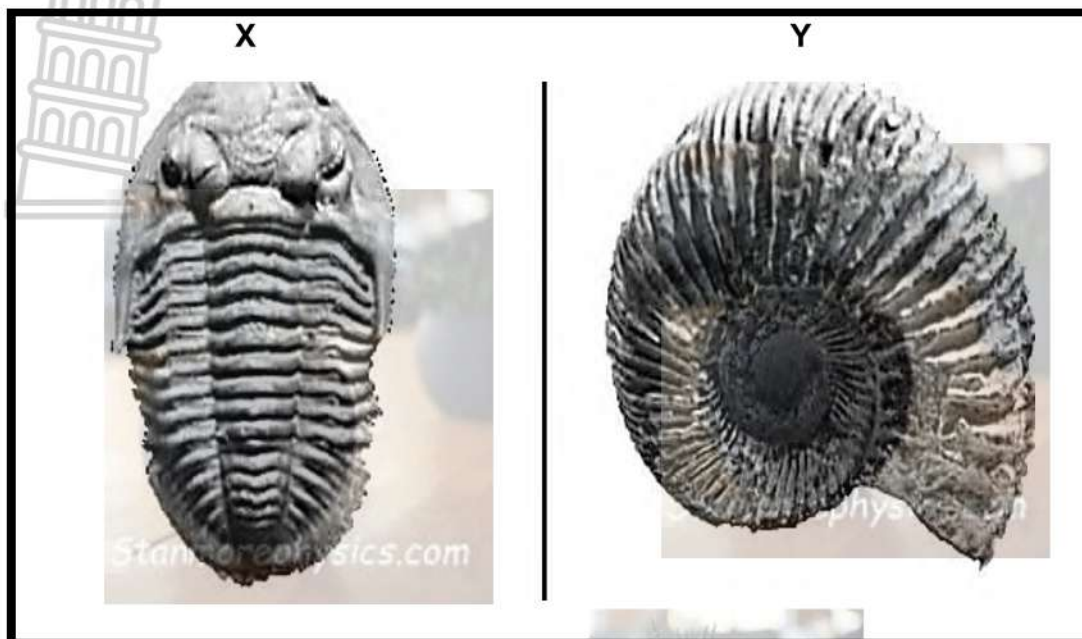
- 1.4.1 Name the nitrogenous compound represented by labels B-C (2)
- 1.4.2 Name the plant labelled **E** that form a symbiotic relationship with nitrogen-fixing bacteria. (1)
- 1.4.3 Name the process labelled **D** by which nitrogen is returned to the atmosphere. (1)

(4)

TOTAL QUESTION 20

SECTION B**QUESTION 2**

2.1 The image below shows two different fossils



2.1.1 Identify:

(a) Fossil X

(1)

(b) Fossil Y

(1)

2.1.2 Name TWO other ways that fossils are formed, other than in sedimentary rock.

(2)

2.1.3 What is the method called that scientists use to date fossils with radioactive isotopes like carbon-14 or potassium-40?

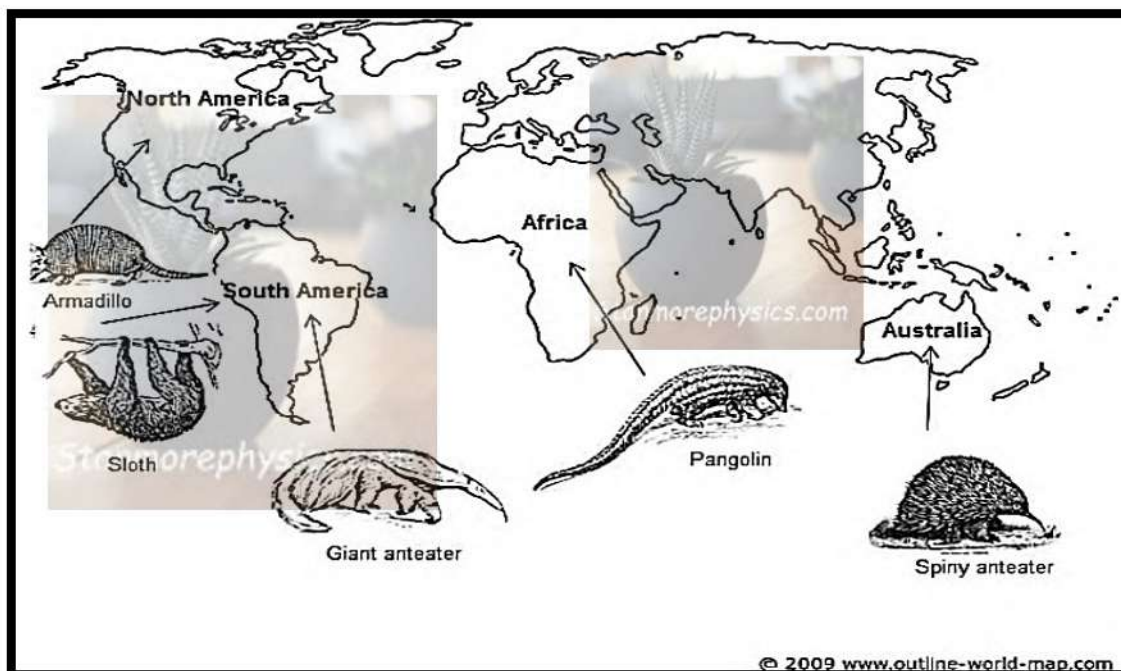
(1)

(5)

2.2 Read the passage below and answer the questions which follow.

Armadillos, anteaters and sloths all belong to the mammalian order Xenarthra. They all look very different as you can see in the diagram below. However, they are genetically more similar to each other than any other mammals. This suggests that these three different groups of animals descended from a common ancestor. Xenarthra are also distantly related to pangolins which are found in Africa.

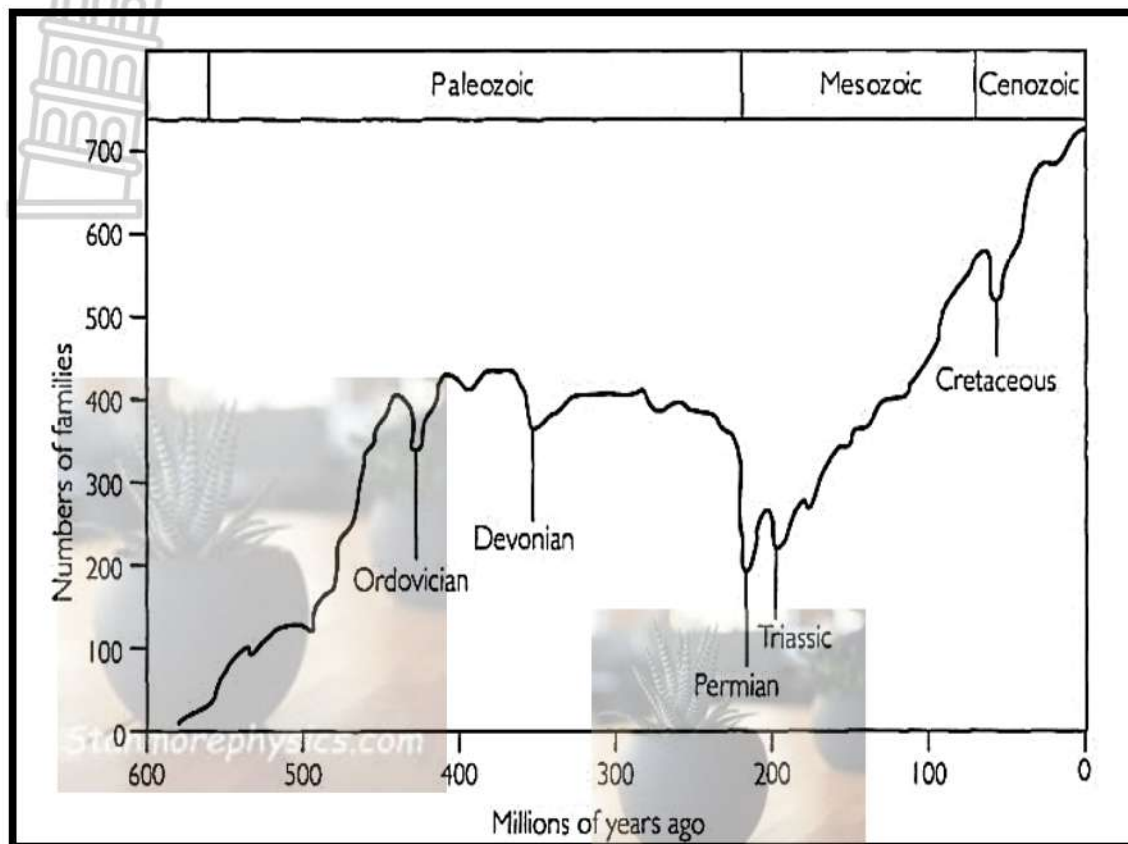
Today we find sloths and the giant anteater (*Myrmecophaga tridactyla*) in South America, the nine banded armadillo (*Dasypus novemcinctus*) in North America, the spiny ant-eater in Australia and 44 species of pangolin in Africa.



- 2.2.1 Name the continent that South America, Africa and Australia formed part of after it broke away from Pangaea. (1)
- 2.2.2 Briefly explain the continental drift theory. (3)
- 2.2.3 Do giant anteaters and armadillo's belong to the same genus? (1)
- 2.2.4 Give a reason for your answer in QUESTION 2.2.3. (2)
- 2.2.5 What do we call the study of the distribution of existing and extinct plant and animal species in specific areas on Earth? (1)
- 2.2.6 Write the scientific name for the nine banded armadillo correctly. (2)

(10)

- 2.3 The diagram below represents a simplified geological time-scale showing how the Number of families (groups of related species) has changes over a period of time.



- 2.3.1 During which era did the number of families increase the most? (1)
- 2.3.2 Which extinction ended the Palaeozoic era? (1)
- 2.3.3 Name TWO factors or events known to have caused mass extinctions. (2)
- 2.3.4 If the Mesozoic Era is known as the "Age of Dinosaurs," how long did dinosaurs inhabit the Earth? (1)

(5)

TOTAL QUESTION 2: 20

QUESTION 3

- 3.1 Gezani and Michael heard that the Spekboom plant is very good at storing carbon dioxide from the atmosphere which helps prevent the extreme increase in Earth's temperature called global warming. This carbon dioxide is used by plants for photosynthesis. They decide to investigate how quickly different plants absorb CO_2 . They got three different types of plants from local nursery: a Spekboom, an Aloe and a Prickly Pear. They make sure that the plants are the same height. They plant them in equal sized pots with the same type and amount of soil. All three plants are placed in the same location and get equal amount of water. They take the weight/mass of their plants in the pots at start of the investigation. They then leave the plants to grow for one month and measure their weight/mass again.

The results are shown in the table below:

Plant	Weight/Mass (g)		
	Start	End	Increase
Aloe	800	832	32
Prickly Pear	800	843	43
Spekboom	800	871	71

- 3.1.1 Plot a bar graph of weight/mass increase of the three plants. (6)
- 3.1.2 Identify the independent variable. (1)
- 3.1.3 Identify five ways that Gezani and Michael ensured the validity of their investigation (5)
- 3.1.4 What was the purpose of measuring the starting weight/mass of the plants? (1)
- 3.1.5 Calculate the percentage increase in mass from the start to the end of the investigation of the Spekboom plant. (2)
- 3.1.6 How could they improve the reliability of their investigation? (2)
- 3.1.7 Explain how using the weight gain of the plants will give Gezani and Michael an idea of how much CO_2 the plants are absorbing. (3)

TOTAL QUESTION 3: 20

SECTION B: 40

GRAND TOTAL: 60



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**LIFE SCIENCES
FORMAL TEST 2
MARKING GUIDELINE
10 SEPTEMBER 2024**

MARKS: 60

TIME: 1 HOUR

This marking guideline consists of 06 pages

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 part of it is required Read all and credit relevant part.
4. If comparisons are asked for and descriptions are given Accept if 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 Candidates will lose marks.
7. If flow charts are given instead of descriptions Candidates 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-recognized abbreviations Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of 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 recognizable accept provided it does not mean something else in Life Sciences or if it is out of context.
13. If common names given in terminology: only accept if provided as an alternative in the marking guideline.
14. If only letter is asked for and only name is given (and vice versa) No credit.
15. If units are not given in measurements: Candidates 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.
17. Caption: All illustrations (diagrams, drawings, graphs, tables, etc.) must have a caption
18. Code-switching of official languages (terms and concepts) A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answer should be credited, if it is correct.
19. No changes must be made to the marking memoranda without consulting the District Curriculum Advisors.

SECTION A

QUESTION 1

- 1.1.
- 1.1.1. D ✓✓
 - 1.1.2. C ✓✓
 - 1.1.3. B ✓✓
 - 1.1.4. B ✓✓ (4 x 2) **(8)**
- 1.2.
- 1.2.1. Population ✓
 - 1.2.2. Continental drift ✓
 - 1.2.3. Abiotic ✓ components
 - 1.2.4. Niche ✓ (4 x 1) **(4)**
- 1.3.
- 1.3.1. B only ✓✓
 - 1.3.2. A Only ✓✓ (2 x 2) **(4)**
- 1.4.
- 1.4.1. B- Ammonia ✓
 - C- Nitrites ✓ (2)
 - 1.4.2. legumes ✓ (1)
 - 1.4.3. Denitrification ✓ (1)
- (4)**
- TOTAL QUESTION 1: 20**

QUESTION 2

- 2.1.
- 2.1.1. (a) Trilobite ✓ (1)
 - (b) Ammonite ✓ (1)
 - 2.1.2. Frozen in ice ✓
 - Trapped in tar ✓
 - Trapped in amber ✓ **Any 2 (2)**
 - 2.1.3. Radiometric dating ✓ (1)
- (5)**

2.2.

2.2.1. Gondwanaland✓ (1)

2.2.2. According to the theory all continent were original one big mass/ super continent called

Pangaea✓

This continent broke up over a period of time into two large masses (Laurasia and Gondwanaland) ✓

They broke up into all the continents we have today/ Laurasia broke up into North America, Europe, Middle East, Asia and China✓ and

Gondwanaland broke up into South America, Africa, Madagascar, Australia, India and Antarctica✓. (Any 3) (3)

2.2.3. No✓

2.2.4. Giant anteaters belong to the genus Myrmecophaga✓ and armadillos belong to the genus Dasypus✓ (2)

2.2.5. Biogeography✓ (1)

2.2.6. Dasypus novemcinctus ✓ (Must be underlined separately) ✓ (2)

(10)

2.3.

2.3.1. Mesozoic✓ (1)

2.3.2. Permian✓ (1)

2.3.3. Volcanic activity✓

Asteroid/ comet impact✓

Climate change✓

Glaciation/ drop in sea levels✓

Any 2 (2)

2.3.4. approximately 170 million years✓ (1)

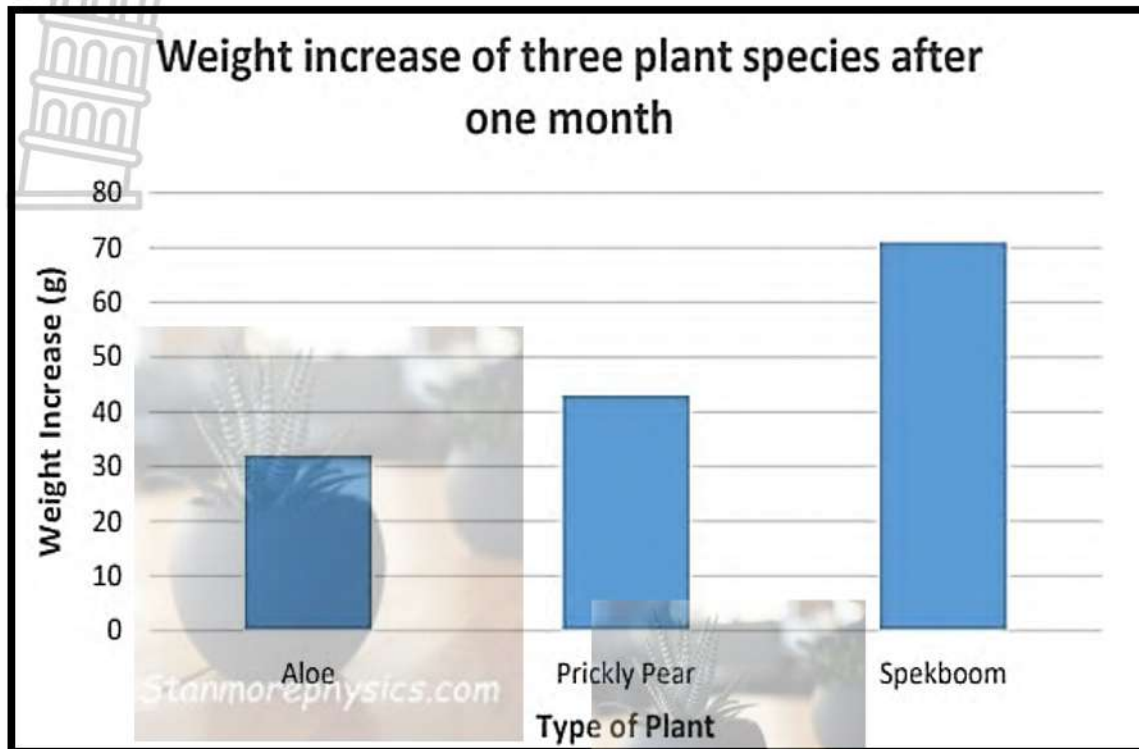
(5)

TOTAL QUESTION 2: 20

QUESTION 3

3.1.

3.1.1.

**Mark allocation:**

Type of Graph (T)		✓
Caption (C) Both variables included		✓
X and Y axis labels and Y axis unit (L)		✓
X and Y axis scales and bars same width (S)		✓
Plotting of points	No bars plotted correctly	X
	1-2 bars plotted correctly	✓
	All bars plotted correctly	✓✓
		(6)

3.1.2. Type of plant✓

(1)

3.1.3. They chose plants of the same height. ✓

They put the plants in equal sized pots✓

All plants had the same type of soil✓

All plants had the same amount of soil✓

All plants were in the same location. ✓

All plants received the same amount of water✓

Any 5 (5)

3.1.4. So that they can know what the increase in weight is at the end✓

(1)

3.1.5. $\frac{71}{800} \times 100 \checkmark = 8,88\% \checkmark$

(2)

800

3.1.6. Increase the sample size✓ and repeat the investigation✓

(2)

3.1.7. When plants absorb CO₂ out of the atmosphere they use it to create

carbohydrates✓ which they use grow✓. The more they grow the more they

gain weight✓

(3)

TOTAL QUESTION 3: 20

TOTAL SECTION B: 40

GRAND TOTAL: 60