



KWAZULU-NATAL PROVINCE

**EDUCATION
REPUBLIC OF SOUTH AFRICA**



**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

**LIFE SCIENCES
COMMON TEST
SEPTEMBER 2024**

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MARKS: 50

TIME: 1 Hour

This question paper consists of 7 pages.

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers to each question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams, tables or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You may use a non-programmable calculator, protractor and a compass.
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 1.1.3) in your ANSWER BOOK, for example 1.1.4 D.

1.1.1 Organisms in an ecosystem that break down the dead organic matter.

- A Producers
- B Primary consumers
- C Secondary consumers
- D Decomposers

1.1.2 Which ONE of the following occurred during ice ages?

- A Sea levels were reduced
- B Sea levels were increased
- C Dinosaurs became extinct
- D Plants evolved

1.1.3 An area that has a unique climate, soil type and type of vegetation is called a...

- A biosphere.
- B biome.
- C population.
- D ecosystem.

(2 x 3) (6)

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 1.2.6) in your ANSWER BOOK.

1.2.1 Non - living things in an ecosystem

1.2.2 Exotic species of plant or animal that do not naturally live in a particular habitat and can cause harm to the ecosystem

1.2.3 A state of inactivity and reduced metabolism when temperatures drop and food become scarce

1.2.4 Soil type that has low water holding capacity and poor nutrient retention

1.2.5 Large variety of different living organisms within the different ecosystems on Earth

1.2.6 Species that are indigenous, found only in one specific area and nowhere else in the world.

(6 x 1) (6)

- 1.3 Indicate whether each of the statements in COLUMN I apply 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 (1.3.1 to 1.3.2) in the ANSWER BOOK.

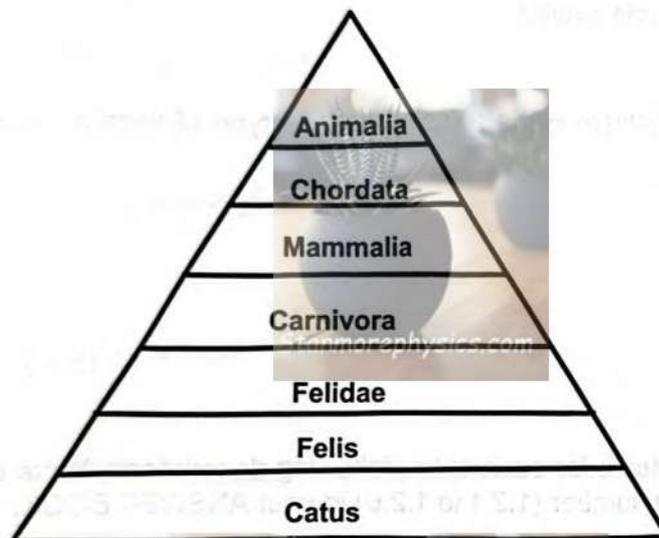
	COLUMN I	COLUMN II
1.3.1	Producers in an food chain	A: Grass B: Trees
1.3.2	Physiographic factors	A: Wind B: Slope

(2 x 2)

(6)

- 1.4 Carolus Linnaeus established a hierarchical classification system of grouping similar organisms together.

He classified a cat as follows:



- 1.4.1 According to Linnaeus' system state the:
- Class to which the cat belongs (1)
 - Species to which the cat belongs (1)
- 1.4.2 Write down the correct scientific name of the cat. (1)
- 1.4.3 State the genus to which humans belong. (1)

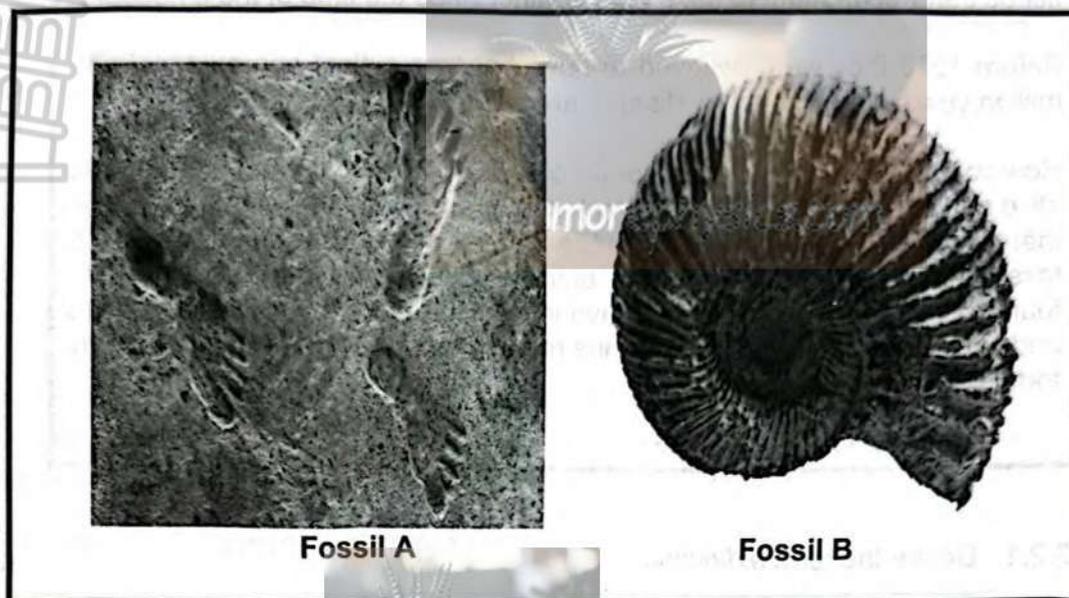
(4)

TOTAL SECTION: A 20

SECTION B

QUESTION 2

2.1 The diagram below shows two types of fossils.



2.1.1 Identify the fossil as (trace or ammonite):

- (a) **A** (1)
- (b) **B** (1)

2.1.2 Describe how fossils **B** may have formed in sedimentary rock. (4)

2.1.3 Scientists use radioactive isotopes such as carbon-14 or potassium-40 to date fossils.

Give the name of this method of dating fossils (1)
(7)

2.2 Read the extract below

In 1938, a Coelacanth was caught at the mouth of the Chalumna River on the east coast of South Africa. This 'living fossil' comes from a lineage of fishes that was thought to have been extinct since the time of the dinosaurs.

Before 1938 they were believed to have become extinct approximately 80 million years ago, when they disappeared from the fossil record.

How could Coelacanths disappear for over 80 million years and then turn up alive and unchanged well in the twentieth century? The answer seems to be that the Coelacanths from the fossil record lived in environments favouring fossilisation. Modern Coelacanths, both in the Comoros and Sulawesi were found in environments that do not favour fossil formation. They inhabit caves and overhangs in near vertical marine reefs, at about 200 m depth, off newly formed volcanic islands.

- 2.2.1 Define the term *extinction*. (2)
- 2.2.2 Name the place where the first coelacanth was caught. (1)
- 2.2.3 Explain why coelacanths are thought to be living fossils. (3)
- 2.2.4 According to the extract, give TWO reasons why Coelacanths disappeared for over million years and returned alive. (2)
- (8)
- [15]

QUESTION 3

- 3.1 The carbon cycle has been operating in nature for million years, but it has become unbalanced in the last 100 years.

Explain how each of the following processes affect levels of carbon dioxide in the atmosphere:

- (a) Respiration (2)
- (b) Photosynthesis (2)
- (c) Decomposition (2)
- (6)

- 3.2 Grade 10 learners investigated the effect of temperature and light levels on the growth of tomatoes.

The results of the investigation are shown in the table below:

DAY TEMPERATURE (°C)	YIELD PER PLANT: LOW LIGHT LEVELS (KG)	YIELD PER PLANT: HIGH LIGHT LEVELS (KG)
10	0.5	0.5
15	1.2	1.4
18	3.2	5.0
20	3.4	8.5
24	3.5	7.8
28	2.5	6.2

- 3.2.1 Give the day temperature in which the yield of tomatoes is the highest under high light levels. (1)
- 3.2.2 Identify the TWO independent variables. (2)
- 3.2.3 Calculate the percentage increase of the yield per plant between 15°C and 20°C under low light levels. Show all working. (3)
- 3.2.4 State ONE way in which the results could be made more reliable. (1)
- 3.2.5 State the conclusion of the above investigation. (2)

(9)
[15]

TOTAL SECTION: B 30
GRAND TOTAL: 50



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**LIFE SCIENCES
COMMON TEST
MARKING GUIDELINE
SEPTEMBER 2024**

MARKS:50

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This marking guideline consist of 6 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

- 1. If more information than marks allocated is given**
Stop marking when maximum mark is 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**
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-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.
If only the letter is asked for but only the name is given (and vice versa)

14. **If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately.
15. **Be sensitive to the sense of an answer, which may be stated in a different way.**
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, graphs, tables, etc.) must have a caption.
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages



SECTION A

QUESTION 1

1.1 1.1.1 D ✓✓

1.1.2 A ✓✓

1.1.3 B ✓✓

(2 x 3) **(6)**

1.2 1.2.1 Abiotic ✓

1.2.2 Alien ✓

1.2.3 Hibernation ✓

1.2.4 Sandy soil ✓

1.2.5 Biodiversity ✓

1.2.6 Endemic ✓

(1 x 6) **(6)**

1.3 1.3.1 Both A and B ✓✓

1.3.2 B only ✓✓

(2 x 2) **(4)**

1.4 1.4.1 (a) Mammalia ✓

(b) catus ✓

(1)

(1)

1.4.2 Felis catus ✓

(1)

1.4.3 Homo ✓

(1)

(4)

TOTAL SECTION A: 20

SECTION B

QUESTION 2

2.1 2.1.1 (a) Trace ✓ (1)

(b) Ammonite ✓ (1)

- 2.1.2 - The organism dies and is rapidly covered ✓
 - by sediment ✓ / silt
 - As time passes layers of sediment build up over the body ✓
 - The layers compress ✓ / are squashed
 - by immense pressure building up ✓
 - Minerals begin to replace animal tissues and the body petrifies ✓

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OR

- The organism dies and is rapidly covered ✓
 - by sediment ✓ / silt
 - As time passes layers of sediment build up over the body ✓
 - The layers compress ✓ / are squashed
 - by immense pressure building up ✓
 - Decompose and leaving an imprint on the rock ✓
 - Sediment will fill up previously formed mould ✓

Any (4)

2.1.3 Radiometric ✓ dating (1)

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(7)

2.2 2.2.1 Extinction is the complete disappearance / death of all individuals of a species from Earth ✓ ✓ (2)

2.2.2 Chalumna river ✓ east coast of South Africa (1)

- 2.2.3 - They were thought to be extinct ✓
 - Yet have existed unchanged ✓
 - for millions of years ✓ (3)

- 2.2.4 - Coelacanths from the fossil record lived in environments favouring fossilisation ✓
 - Modern Coelacanths, both in the Comoros and Sulawesi were found in environments that do not favour fossil formation ✓ (2)

(Mark the first TWO only) (8)
[15]

QUESTION 3

3.1 (a) Animals release carbon dioxide ✓ during respiration
resulting in the increase of the levels of carbon dioxide ✓ into the atmosphere (2)



(b) Plants use carbon dioxide ✓ during photosynthesis
resulting in the decrease of the levels of carbon dioxide ✓ in the atmosphere (2)

(c) Plants and animals release carbon dioxide ✓ during decomposition
resulting in the increase of the levels of carbon dioxide ✓ in the atmosphere (2)
(6)

3.2 3.2.1 20°C ✓ (1)

3.2.2 Temperature ✓
Light levels ✓ (2)
(Mark the first TWO only)

3.2.3 $\frac{3.4 - 1.2}{1.2} \times 100$ ✓
= 183,33% ✓ / 183% (3)

3.2.4 - Repeat the investigation ✓
- Increased sample size ✓ (1)
(Mark the first ONE only)

3.2.5 As the day temperature increases the yield per plant of tomatoes also increases in low and high light levels until they reach an optimum ✓✓

OR

As the day temperature increases the yield per plant of tomatoes also increases more in high light levels than in low light levels until they reach an optimum ✓✓ (2)

(9)

[15]

**TOTAL SECTION B: 30
GRAND TOTAL: 50**