

STANMORE SECONDARY SCHOOL

EXAMINER: MRS J. RAMSEWAK

MODERATOR: MS C. MOODLEY

MARKS: 60

DURATION: 1 HOUR

LIFE SCIENCES

CONTROLLED TEST

NOVEMBER 2022



GRADE 10

N.B. This question paper consists of 3 QUESTIONS and 6 PAGES.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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. ALL drawings must be done in pencil and labelled in blue or black ink.
6. Write neatly and legibly.

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the 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, for example 1.1.6 D.

1.1.1. The basic unit of life is a

- A. cell
- B. zygote
- C. protoplasm
- D. nucleus

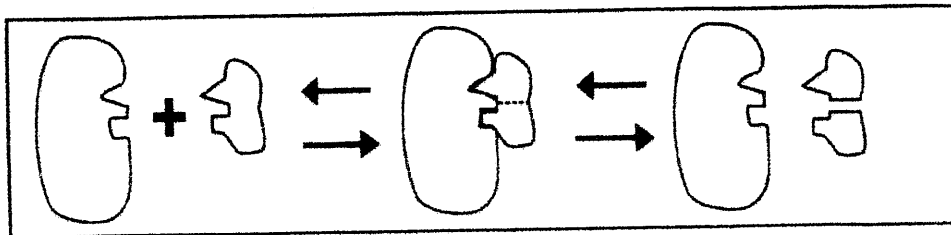
1.1.2. A general group of plants adapted to grow in extremely dry regions are referred to as

- A. hydrophytes
- B. xerophytes
- C. mesophytes
- D. desert plants

1.1.3. In which of the following processes is mitosis not involved?

- A. Replacement of cells in a cut through the skin.
- B. Production of sperms in the testes.
- C. Production of identical daughter cells.
- D. Growth of an organism.

1.1.4. Which property of enzymes is represented by the sequence of diagrams below?



- A. Enzymes can speed up a chemical reaction.
- B. Enzymes can lower the activation energy.
- C. Enzymes are proteins.
- D. Enzymes are specific in their function

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. – 1.2.6.)

- 1.2.1. The loss of water in the form of water vapour through aerial parts of the plant.
- 1.2.2. Feeding levels of different organisms within an ecosystem.
- 1.2.3. The form in which nitrogen is absorbed by plants through the roots.
- 1.2.4. Cell organelles that are centres for cellular respiration.
- 1.2.5. A deficiency disease associated with bleeding gums.
- 1.2.6. Red pigment in red blood cells that transport oxygen.

6 x 1 (6)

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 (1.3.1. to 1.3.3.) in the ANSWER BOOK.

Column I	Column II
1.3.1. Undifferentiated cells present at the tips of stems and roots that are actively dividing by mitosis to produce new cells.	A. Meristematic tissue B. Permanent tissue.
1.3.2. An abiotic factor relating to soil.	A. Physiographic B. Edaphic
1.3.3. Organisms that cannot produce their own food.	A. Heterotrophic B. Decomposers

3 x 2 (6)

SECTION A: 20 MARKS

SECTION :B

QUESTION :2

2. 1 A scientist wanted to investigate whether light is required for the germination of seeds. She filled two plant pots of the same size with equal amounts of soil.

Pot 1 was labelled "LIGHT" and Pot 2 "Dark"

- (5) Five lettuce seeds were planted in each of the pots. Both plants were given sufficient water.

Pot 1 was put in direct sunlight.

A cardboard box was placed over Pot 2 and no light was allowed to enter.

2.1.1. Write down a hypothesis for the investigation. (2)

2.1.2. Identify the :



a. independent variable (1)

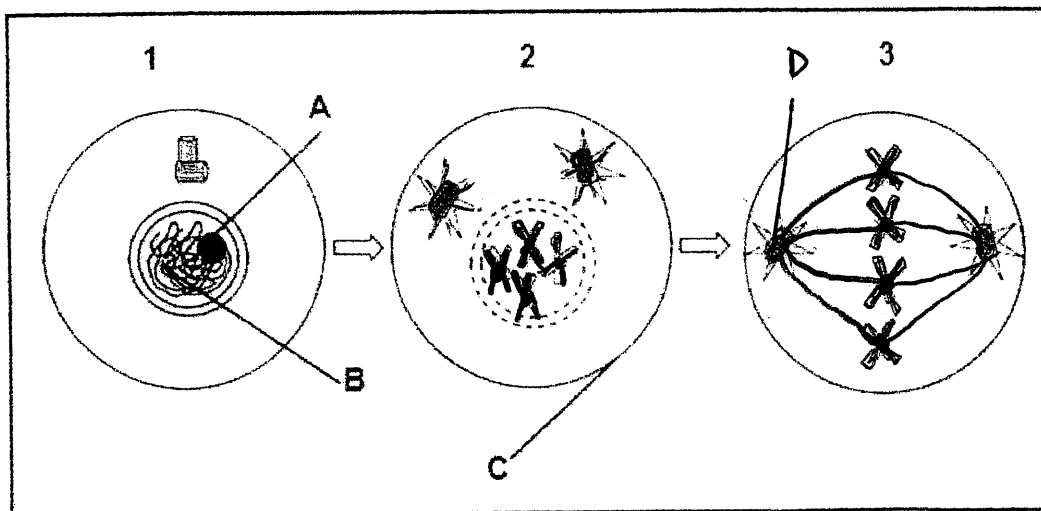
b. dependent variable (1)

2.1.3. List **TWO** variables that were kept constant. (2)

2.1.4. Suggest **TWO** ways in which the reliability of this experiment could be improved. (2)

(8)

2.2 The diagrams below represent different phases of a particular process.



2.2.1 Identify the process represented above. (1)

2.2.2. Label structures **A**, **B** and **C**. (3)

2.2.3. Provide a label for **D** and state its function. (2)

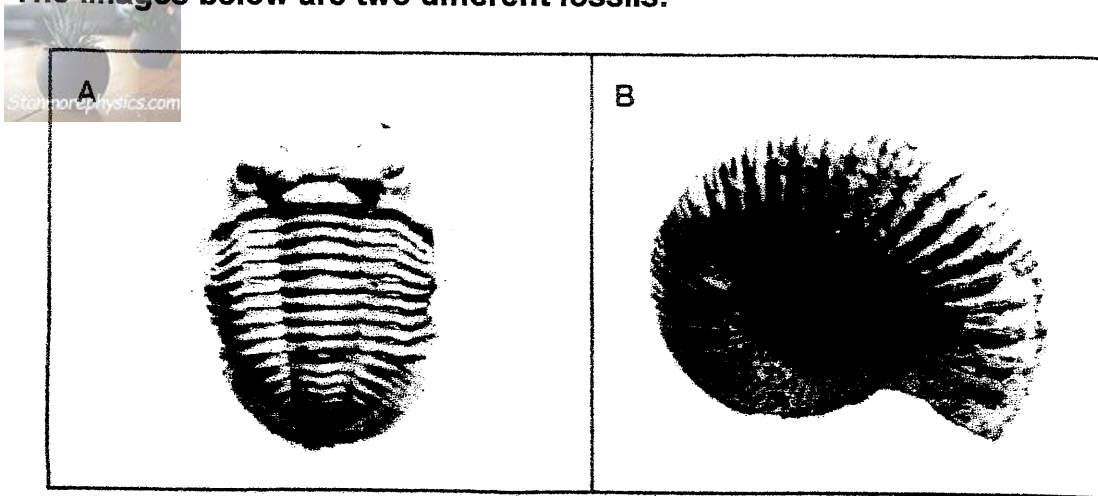
2.2.4. Which phase is represented by **diagram 3**? (1)

2.2.5. Draw a labelled diagram of a phase which follows the phase mentioned in **QUESTION 2.2.4** above. (3)

2.2.6. Explain what would happen if the process mentioned in **QUESTION 2.2.1** does not take place. (2)

QUESTION 3

3.1. The images below are two different fossils.



3.1.1. Identify:

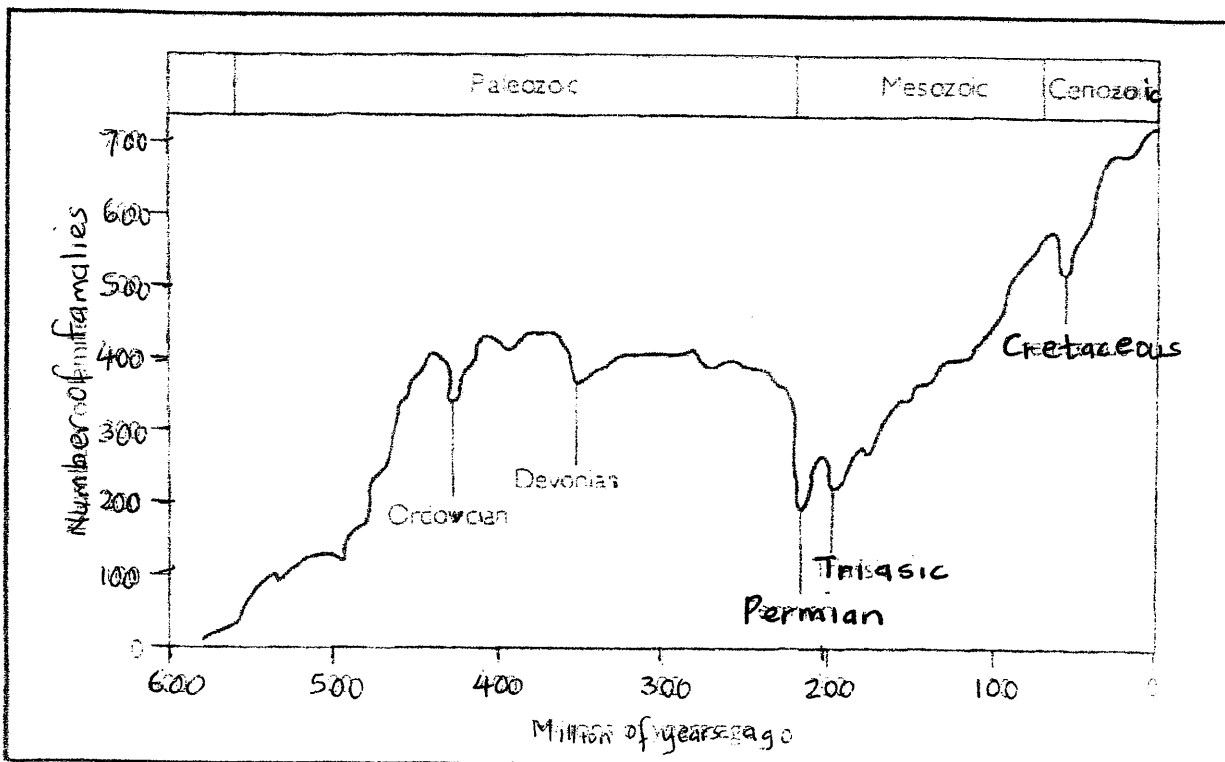
a. Fossil A (1)

b. Fossil B (1)

3.1.2. Describe how these fossils may have formed in sedimentary rock. (4)

3.1.3. Scientists use radioactive isotopes such as carbon-14 or potassium-40 to date fossils. What is this method of dating fossils called? (1)
(7)

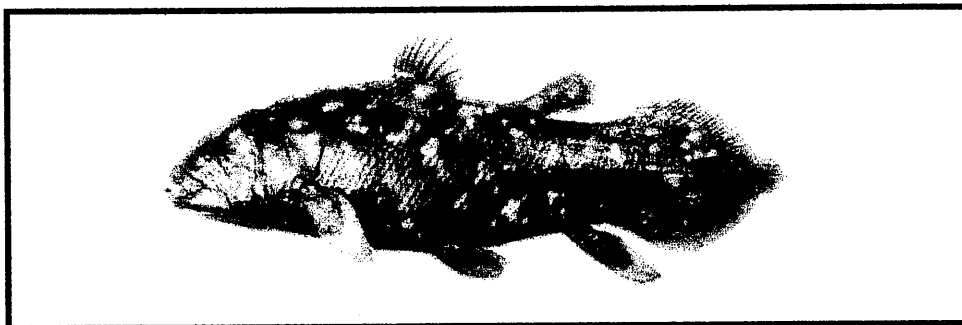
3.2. The diagram below represents a simplified geological time-scale showing how the number of families (groups of related species) has changed over a period of time.



- 3.2.1. How many mass extinctions took place since the creation of the earth? (1)
- 3.2.2. Which mass extinction took place towards the end of the Palaeozoic era? (1)
- 3.2.3. Which era had the longest duration? (1)
- 3.2.4. Name **TWO** factors or events known to have caused mass extinctions. (2)
- 3.2.5. When did the Triassic extinction take place? (1)
- 3.2.6. Which extinction was the biggest in terms of the number of families that went extinct? (1)
- 3.2.7. Scientists believe that we are currently experiencing the sixth mass extinction. What is thought to be the cause of this mass extinction? (1)
- (8)**

3.3.

The diagram below shows a picture of a coelacanth.



- 3.3.1. Why are coelacanths thought to be living fossils? (2)
- 3.3.2. Where was the first live coelacanth caught? (1)
- 3.3.3. Coelacanths are thought to be the missing link between fish and amphibians. (1)
- What do we call the fossil that have common features of two different groups and show the change from one group to the other?
- 3.3.4. Give **ONE** example of any other missing link that you have studied other than the coelacanth. (1)
- (5)**



[20]

SECTION :B 40 MARKS

TOTAL: 60 MARKS



Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES
NOVEMBER 2022
MEMORANDUM

GRADE 10

MARKS: 60

This memorandum consists of 5 pages

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

- If more information than marks allocated is given**
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.
- If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect
- If whole process is given when only a part of it is required**
Read all and credit the relevant part.
- If comparisons are asked for, but descriptions are given**
Accept if the differences/similarities are clear.
- If tabulation is required, but paragraphs are given**
Candidates will lose marks for not tabulating.
- If diagrams are given with annotations when descriptions are required**
Candidates will lose marks.
- If flow charts are given instead of descriptions**
Candidates will lose marks.
- 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.
- 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.
- Wrong numbering**
If answer fits into the correct sequence of questions, but the wrong number is given, it is acceptable.
- If language used changes the intended meaning**
Do not accept.
- Spelling errors**
If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.
- 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)**
Do not credit.
- If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately.
- Be sensitive to the sense of an answer, which may be stated in a different way.**
- Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.



Please turn over

SECTION A

QUESTION 1

1.1 1.1.1 A✓✓
 1.1.2 B✓✓
 1.1.3 B✓✓
 1.1.4 A✓✓

(4 x 2) **(8)**

1.2 1.2.1 Transpiration ✓
 1.2.2 Trophic levels ✓
 1.2.3 Nitrates ✓
 1.2.4 Mitochondrion✓
 1.2.5 scurvy✓
 1.2.6 haemoglobin✓

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

1.3 1.3.1 A only ✓✓
 1.3.2 B only ✓✓
 1.3.3 Both A and B ✓✓

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

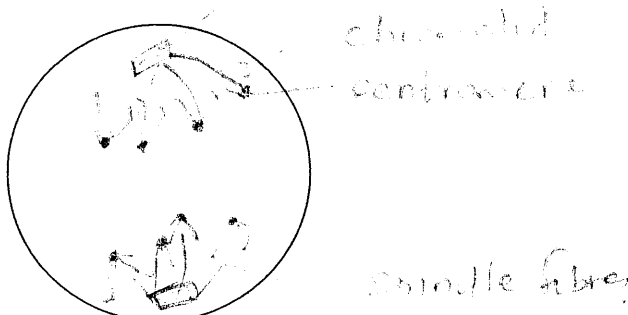
TOTAL SECTION A: [20]

QUESTION 2

- 2.1 2.1.1 Seeds will germinate better in sunlight[✓] than in the darkness[✓]. OR (2)
 Seeds will germinate better in darkness than in sunlight. OR
 Seeds will germinate well whether in sunlight or darkness.
- 2.1.2 (a) sunlight / darkness [✓] (1)
 (b) amount of seeds that germinated[✓] (1)
- 2.1.3 Amount of soil [✓] (Any two) (2)
 Size of pot plants [✓]
 Number of seeds
 Amount of water
- 2.1.4 Repeat the experiment and take an average of the results. [✓] (2)
 Increase the sample size (put more seeds in each pot) [✓] (8)

2.2

- 2.2.1 Mitosis [✓] (1)
- 2.2.2 A – nucleolus [✓] (1)
 B- chromatin network [✓] (1)
 C- cell membrane [✓] (1)
- 2.2.3 D-Centiole - provides spindle fibres to hold the chromosomes. (2)

- 2.2.4 Metaphase (1)
- 

Caption [✓] (3)
 Correct phase[✓]
 Correct label [✓]

Anaphase

- 2.2.5 No growth will occur in living organisms.[✓] (2)
 No repair of worn out and damaged tissue. [✓]
 No asexual reproduction in unicellular organisms.

[20]

QUESTION 3

	3.1.1	a) trilobite ✓ b) ammonite ✓	(1) (1)
	3.1.2	The organism dies and is covered rapidly ✓ By sediments/silt ✓ As time passes layers of sediments build up over the body ✓ The layers compress and pressure builds up. ✓ Minerals from the rock seep into the bones and harden it. ✓	(4)
	3.1.3	Radiometric dating.	(7)
	3.2.1	5 ✓	(1)
	3.2.2	Permian ✓	(1)
	3.2.3	Palaeozoic ✓	(1)
	3.2.4	Volcanic activity ✓ Asteroid / comet impact ✓ Climate change Glaciations / drop in sea level	(2)
	3.2.5.	200 mya ✓	(1)
	3.2.6.	Permian	(1)
	3.2.7.	Exploitation of the environment by humans. ✓	(1) (8)
3.3.	3.3.1	They were thought to be extinct ✓ yet they have existed unchanged for millions of years ✓.	(2)
	3.3.2	Off the coast of East London	(1)
	3.3.3	Transitional fossils	(1)
	3.3.4	Archaeopteryx Thrinaxodon Lystrosaurus	(1) (5)
TOTAL SECTION B:			40
GRAND TOTAL:			60

