KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

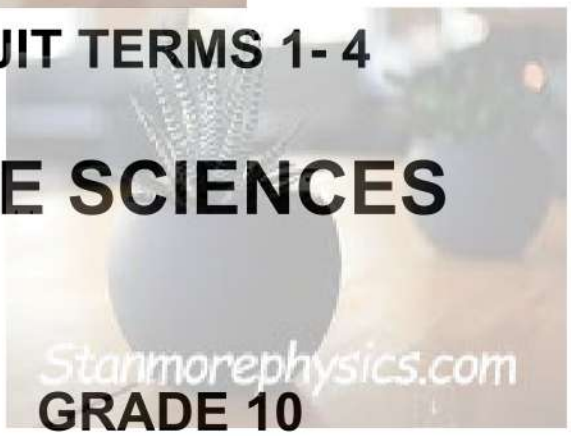
CURRICULUM DIRECTORATE

GRADE 10 -12

INFORMAL ASSESSMENT:

TOPIC TESTS

JIT TERMS 1- 4



LIFE SCIENCES

GRADE 10

2024

SCHOOL NAME:	
LEARNER NAME:	

INTRODUCTION

This document has been prepared as informal assessment material for the Final Examinations for Grade 10 & 11 Life Sciences.

The Topic tests have been arranged according to the sequence of topics in the ATP and 2024 Examination Guidelines.

Therefore, this document can be used to prepare learners for formal assessment.

The focus was on the core concepts and skills for life sciences.

TABLE OF CONTENTS:

KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: CHEMISTRY OF LIFE

MARKS: 30

TIME: 30 MINUTES

N.B. This question paper consists of 5 pages including this page.

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. Start the answers to EACH question at the top of a NEW page.
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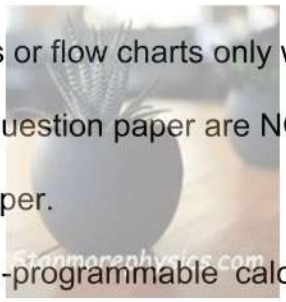


SECTION A

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 1.1.2) in your ANSWER BOOK, for example 1.1.3 D.

1.1.1 The temperature at which an enzymes function best is called…

A base line.
B maximum.
C optimum.
D reference.

1.1.2 Which ONE of the following elements is found in energy carriers?

A Nitrogen
B Phosphorus
C Potassium
D Calcium

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

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) in the ANSWER BOOK.

1.2.1 Organic compounds made up of elements C, H and O, where the ratio of H:O is 2:1

1.2.2 The smallest unit of matter that can take part in a chemical reaction

1.2.3 The yellowing of leaves as a result of iron deficiency in plants

1.2.4 A biological catalyst that speed up a chemical reaction without being changed in a reaction

(4 x 1) **(4)**

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 1.3.2) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Lack of this vitamin/s cause/s rickets	A: Vitamin A B: Vitamin B
1.3.2	Monomers of carbohydrates	A: Monosaccharides B: Nucleotides

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

TOTAL SECTION A: 12

SECTION B

QUESTION 2

2.1 The table below shows the results of the investigation that was done by grade 10 learners.
The investigation was conducted to determine the effect of temperature on enzyme activity.

Temperature (°C)	5	10	20	30	40	50	60
Enzyme activity (%)	0	15	25	35	24	16	0

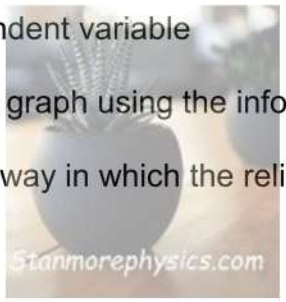
2.1.1 Identify the :

(a) Independent variable (1)

(b) Dependent variable (1)

2.1.2 Draw a line graph using the information from the table above. (6)

2.1.3 State ONE way in which the reliability of the investigation can be improved. (1)
(9)



QUESTION 3

3.1 The table below shows nutritional information on three cereal packets A, B and C. Each packet has a mass of 500g
A 15-year old boy showed the following symptoms after eating one serving of cereal B.

- Bleeding gums
- Nosebleed
- Sores on the skin

NUTRIENT (g)	CEREAL A	CEREAL B	CEREAL C
Protein	2	9	1
Vitamin C	35	30	60
Sodium	200	270	135
Fats (lipids)	7	36	18
Carbohydrates	50	65	55

3.1.1 Name the monomers of fats. (2)

3.1.2 Using the list of symptoms mentioned above, name a deficiency disease that the boy is suffering from. (1)

3.1.3 Calculate the percentage of vitamin C in cereal B. (2)

3.1.4 Which cereal (**A**, **B** or **C**) will be LEAST suitable to the boy? (1)

3.1.5 Give ONE reason for your answer to QUESTION 3.1.4. (1)

3.1.6 Explain the results if the colour changes to brick-red during a protein test. (2)

(9)

TOTAL SECTION B: (18)
GRAND TOTAL: [30]

KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: CELLS-BASIC UNIT OF LIFE

MARKS: 30

TIME: 30 minutes

N.B. question paper consists of 5 pages including this page.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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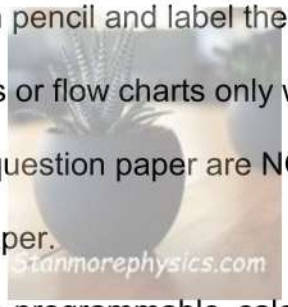


SECTION A

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.) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 Which of the following molecules is the main substance that makes up the primary cell wall?

A. Glucose
B. Cellulose
C. Starch
D. Glycogen

1.1.2. When a pupil observed a plant tissue under microscope the magnification was x400. Which combination of lenses provides this magnification?

A. 10x eye-piece and a 40x objectives
B. 40x eye-piece and a 20x objectives
C. 200x eye-piece and a 200x objectives
D. 100x eye-piece and a 300x objectives (2 x 2) **(4)**

1.2.

1.2.1 A site where energy for the cell is produced

1.2.2 The transport of molecules across membranes that requires energy

1.2.3 The communication and transport system inside a cell

1.2.4 The membrane that surrounds the plant vacuole (4 x 1) **(4)**

1.3 Indicate whether each of the statements in COLUMN I applies to A ONLY, B ONLY, BOTH A AND B or NONE. Write A ONLY, B ONLY, BOTH A AND B or NONE next to the question number in the answer sheet.

COLUMN I	COLUMN II
1.3.1. The cell organelles in which proteins are synthesized	A Ribosomes B Lysosomes
1.3.2. Contains pigment/s in a plant cell	A Chromoplast B Chloroplast

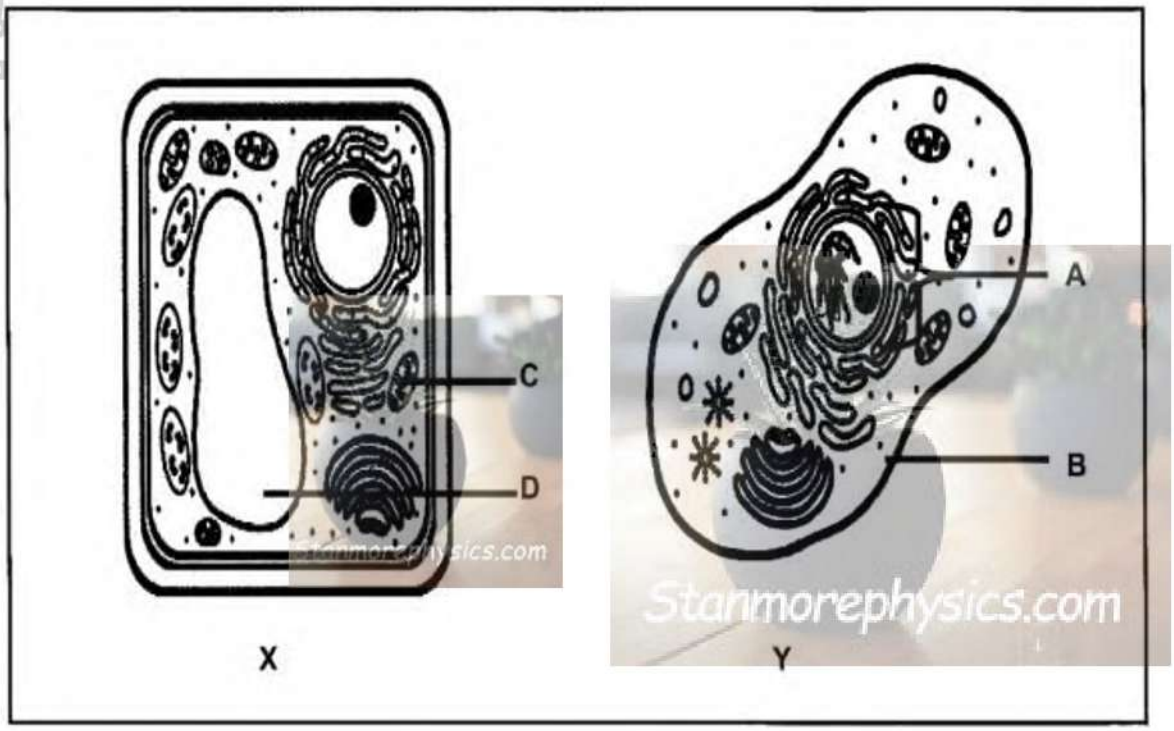
(2 x 2) **(4)**

TOTAL SECTION A: 12

SECTION B

QUESTION 2

2.1 Diagrams below show two types of cells



2.1.1 Which structure (**X** or **Y**) represent plant cell? (1)

2.1.2 Give TWO visible reasons for your answer in Question 2.2.1. (2)

2.1.3 Name the type of nucleic acid found in **A.** (1)

2.1.4 Write ONLY the letter of the part that is the site for cellular respiration. (1)

2.1.5 Explain what will happen to the cell if part **B** becomes impermeable. (4)

(9)

QUESTION 3

3.1 Grade 10 learners conducted an experiment to illustrate osmosis in plant tissue. The experimental set up is shown below:

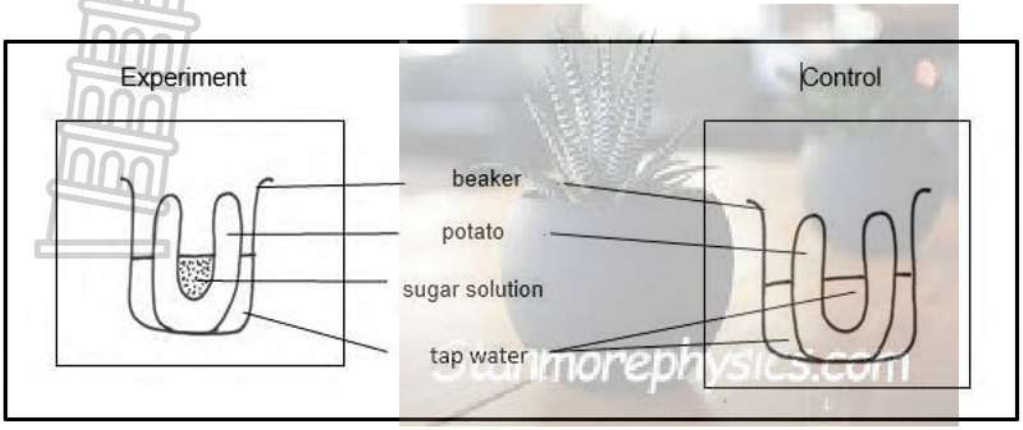


Diagram to indicate the setup of the experiment.

3.1.1 Provide a definition for osmosis. (2)

3.1.2 Describe what will happen to the level of the sugar solution inside the hollow potato in the:

(a) Experiment (1)

(b) Control (1)

3.1.3 State ONE way in which the validity of the results can be increased. (1)

3.1.4 Provide the function of a differentially permeable membrane. (1)

3.1.5 Explain how the differentially permeable membrane carried out its function in the experiment. (3)

(9)

TOTAL SECTION B: (18)

GRAND TOTAL: [30]

KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: CELL DIVISION-MITOSIS

MARKS: 30

TIME: 30 Minutes

N.B. This question paper consists of 05 pages including this page.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
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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 1.1.2) in your ANSWER BOOK, for example 1.1.3 D.

1.1.1 Which one of the following processes occurs during metaphase of mitosis?

A Chromosomes arrange at the equator
B DNA replication
C Chromatids move to the poles
D Chromosomes move to the poles

1.1.2 How many mitotic divisions are needed for a single cell to produce 128 cells?

A 14
B 28
C 64
D 7

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) in the ANSWER BOOK.

1.2.1 The name given to the abnormal and uncontrollable division of cells leading to the formation of a tumour

1.2.2 The phase between cell cycles

1.2.3 Structure that holds two chromatids together

1.2.4 The division of the cytoplasm

(4x1) **(4)**

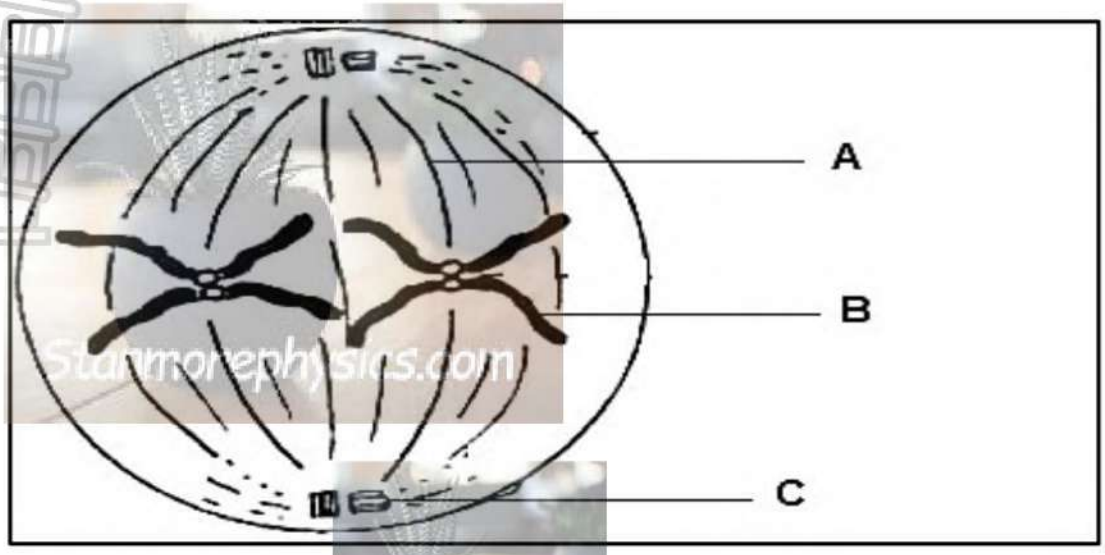
1.3 Indicate whether each of the descriptions in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B** or **none** next to the question number (1.3.1 to 1.3.3) in the ANSWER BOOK.

COLUMN I		COLUMN II
1.3.1	Chromosomes arrange at the Equator	A: Metaphase B: Anaphase
1.3.2	The number of cells at the end of Mitosis	A: 2 B: 4

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

TOTAL SECTION A: 12

2.1 The diagram below shows a cell undergoing a phase in cell division called mitosis.



2.1.1 Identify the phase of mitosis represented above. (1)

2.1.2 Give ONE reason for your answer to QUESTION 2.1.1 (1)

2.1.3 Identify parts labelled A, B, and C (3)

2.1.4 How many chromosomes will be present in the cell shown above at the end of mitosis? (1)

2.1.5 State THREE biological importance of mitosis. (3)

(9)

QUESTION 3

3.1 Read the following passage and answer the questions that follow.

> Cancer causes more deaths in South Africa than HIV/Aids, tuberculosis and malaria. It is roughly the cause of one in four deaths, meaning 25% of deaths are due to cancer. Globally, however, lung cancer tops the list for men, followed by prostate cancer and colorectal cancer. For women, breast cancer is the most prevalent across the board, then cervical/uterine cancer and lung cancer. The top five cancers by cost were leukemia (R280 000), multiple myeloma (R230 000), cancers of the central nervous system (R180 000), lung cancer (R160 000) and colorectal cancer (R120 000) per case, on average.
>
> [Source: www.iol.co.za/cancer, Accessed on 15 September 2018]

3.1.1 Which type of cancer is most common to males? (1)

3.1.2 State TWO ways in which cancer can be treated. (2)

3.1.3 Use the information in the table below and draw a bar graph to show the top five cancers and the costs per case. (6)

TYPES OF CANCER	CANCERS BY COST
Leukemia	R280 000
Multiple myeloma	R230 000
Cancers of the central nervous system	R180 000
Lung cancer	R160 000
Colorectal cancer	R120 000

(9)

TOTAL SECTION B: (18)
GRAND TOTAL: [30]

KWAZULU-NATAL PROVINCE
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NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: PLANT TISSUE AND PLANT ORGAN (LEAF)

MARKS: 30

TIME: 30 minutes

N.B. This question paper consists of 5 pages including this page.

INSTRUCTIONS AND INFORMATION

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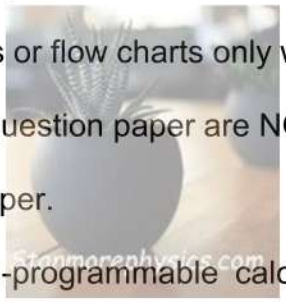


SECTION A

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 C) next to the question number (1.1.1 to 1.1.2) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 Which part of root is made up of a parenchyma and endodermis?

A Cambium
B Cortex
C Pericycle
D Central cylinder

1.1.2 Which of the following tissues has sieve tubes and companion cell.

A Endodermis
B Xylem
C Sclerenchyma
D Phloem

(2x2) **(4)**

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

1.2.1 The tissue which continually forms new cells in plants
1.2.2 Parenchyma cells that contain chlorophyll
1.2.3 Plant tissue that is responsible for growth
1.2.4 Plant tissue with lignified cell wall

(4x1) **(4)**

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.

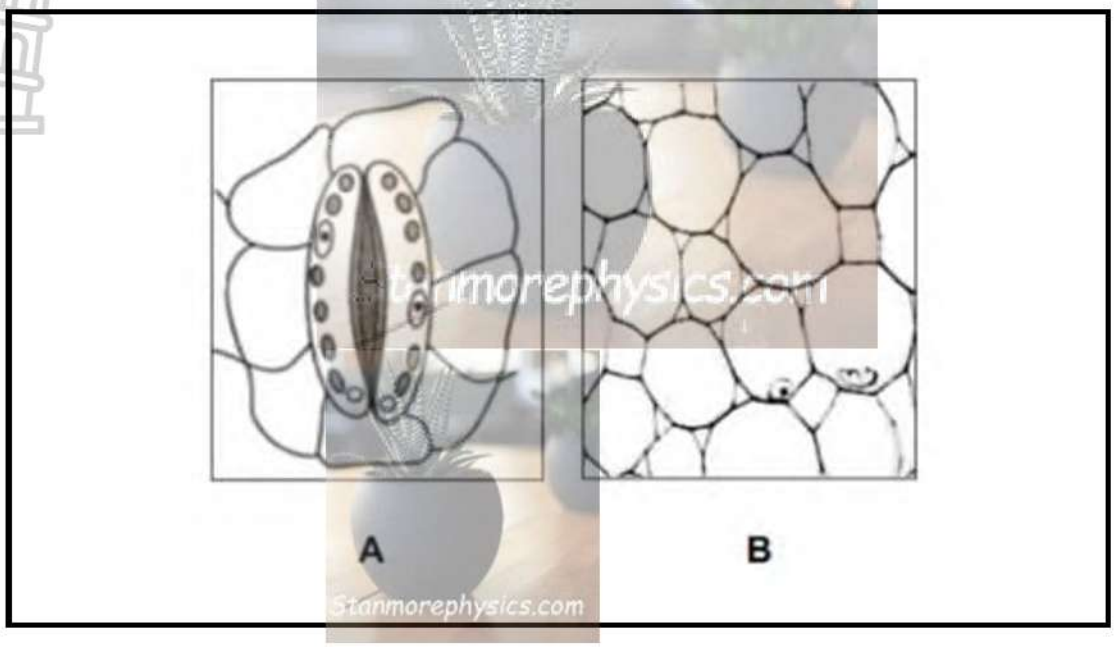
	COLUMN I	COLUMN II
1.3.1	Cell walls mainly thickened in the corners	A: Collenchyma B: Scerenchyma
1.3.2	Mesophyll cells that contain chloroplast	A: Palisade Mesophyll B: Spongy Mesophyll

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

SECTION B

QUESTION 2

2.1 The diagram below shows the different types of plant tissues.



2.1.1 Identify tissue **B** (1)

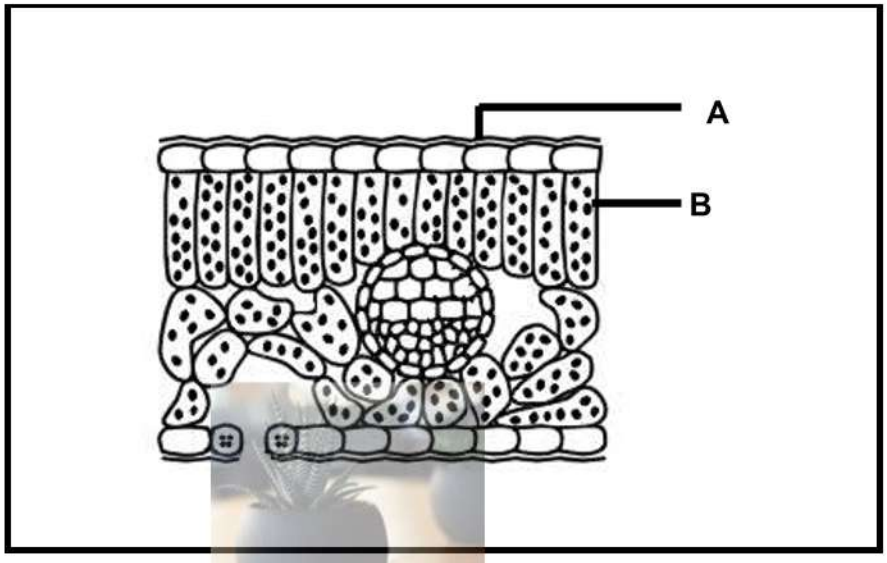
2.1.2 Explain TWO structural adaptations of tissue **A** for its functions. (4)

2.2 Draw a fully labelled diagram of an epidermal cell with a root hair. (4)

[9]

QUESTION 3

3.1 The diagram below show a cross section of a leaf



3.1.1 Give the LETTER and NAME of the part that reduces water loss in the leaf. (2)
3.1.2 Explain how part B assists the leaf to perform its function. (2)
3.2 Tabulate TWO differences between xylem vessel and phloem sieve tube (5)
(9)

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
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REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: SUPPORT AND TRANSPORT IN PLANTS

MARKS: 30

TIME: 30 Minutes

N.B. This question paper consists of 7 pages including this page.

INSTRUCTIONS AND INFORMATION

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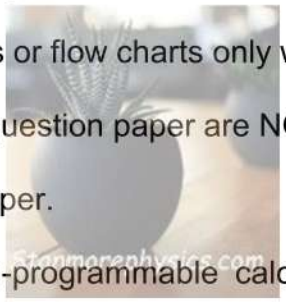


SECTION A

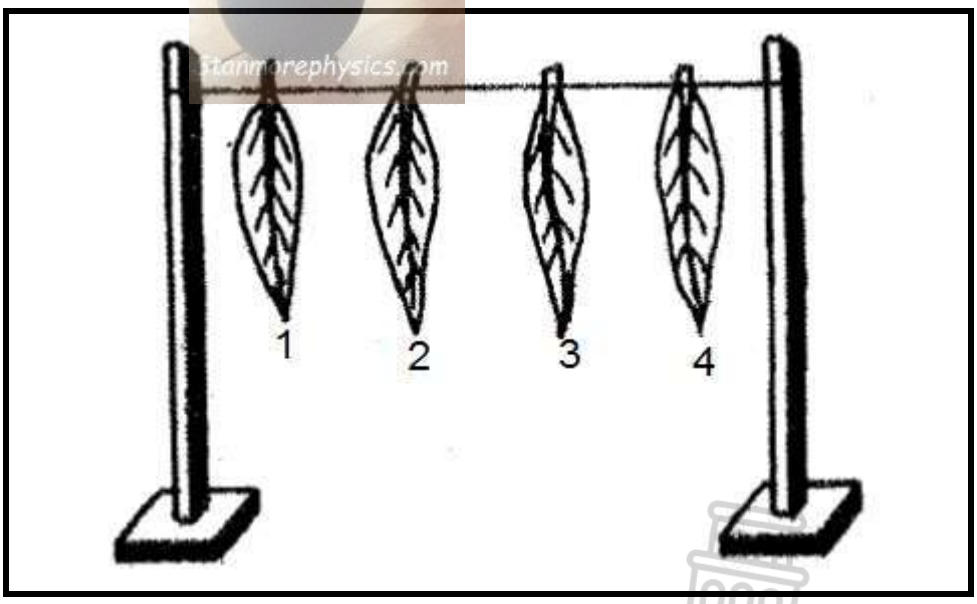
QUESTION 1

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 1.1.10) in your ANSWER BOOK, for example 1.1.3 D.

1.1.1 The function of the xylem is to …

A transport food from the leaves to all parts of the plant
B transport water and mineral salts from the roots to all part of the plants
C transports waste material out of the plant
D transport and store useful substances to all parts of the plant

1.1.2 The diagram below shows leaves that have been treated in various ways during an investigation on transpiration



Leaf 1 - coated with Vaseline on both sides
Leaf 2 - coated with Vaseline on the lower surface only
Leaf 3 - coated with Vaseline on the upper surface only
Leaf 4 – uncoated

Which one of the following leaves will lose water most rapidly?

A Leaf 1
B Leaf 2
C Leaf 3
D Leaf 4

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

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) in the ANSWER BOOK.

1.2.1 Tissue that transports food from the leaves to all parts of the body of plant

1.2.2 A waterproof band found in the cell walls of the endodermis that directs water into the xylem

1.2.3 The loss of water vapor through the stomata

1.2.4 The movement of manufactured food from plant leaves to the rest of the plant (4 x 1) **(4)**

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 1.3.2) in the ANSWER BOOK.

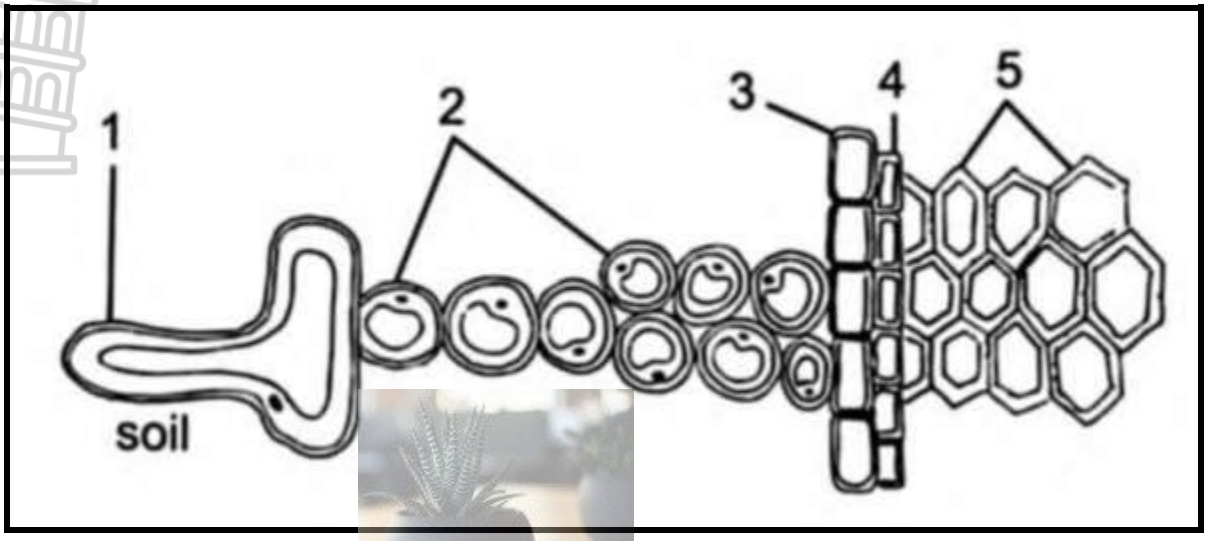
COLUMN I		COLUMN II
1.3.1	Factor affecting transpiration rate	A: Humidity B: Temperature
1.3.2	Force responsible for upward movement of water in plants	A: Capillarity B: Transpiration pull

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

TOTAL SECTION A: 12

SECTION B
QUESTION 2

2.1 Diagram below shows a cross section through an angiosperm root



2.1.1 List the NAMES of tissues through which water passes until it reaches the xylem in the correct order. (2)

2.1.2 Describe how water enters the structure numbered 1 from the soil (4)

2.1.3 Explain ONE way in which structure numbered 5 is suited for its function (2)

2.1.4 Name the force which develops in the root as a result of the absorption into the root by osmosis (1)

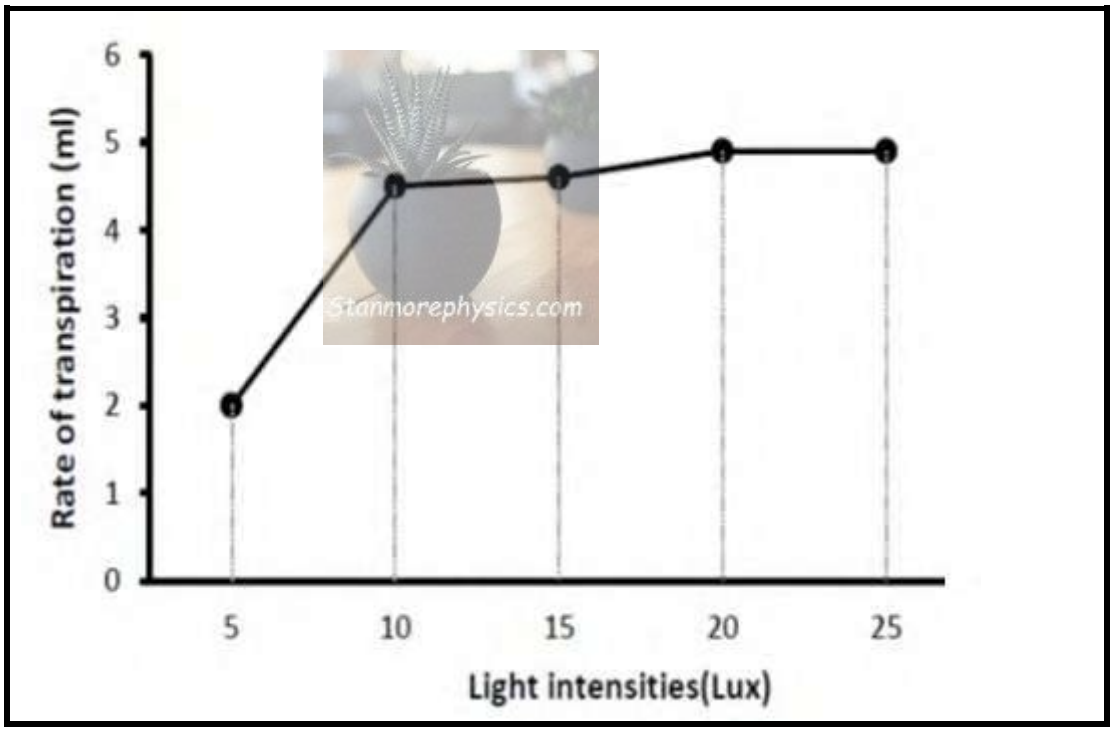
[9]

QUESTION 3

3.1 Grade 10 learners conducted an investigation to determine the effect of different light intensities on the rate of transpiration in leaves.

The following procedure was followed:
- 2 leafy shoots of the same plant were used
- The leafy shoots were of the same age
- The leafy shoots were then labelled leafy shoot A and leafy shoot B
- Leafy shoot A was exposed to different light intensities
- Leafy shoot B was placed in a dark area
- Potometer was used to measure the rate of transpiration in both groups
- The results of the investigation were recorded in every hour for each group

The results for leafy shoot A are shown in the graph below



3.1.1 Identify the dependent variable in the investigation (1)

3.1.2 State the effect of increasing the light intensity on transpiration rate from 0 to 5 (1)

3.1.3 Explain why an increase in light intensity above 10 does not increase the rate of transpiration (2)

3.1.4 State ONE way in which learners increased the validity of the investigation (1)

3.1.5 Explain why group B was included in the investigation (2)

3.1.6 State the conclusion for the above investigation (2)

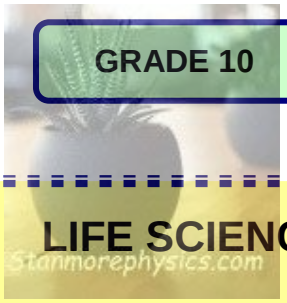
[9]

TOTAL SECTION B: 18
GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10



LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: ANIMAL TISSUES

MARKS: 30

TIME: 30 Minutes

N.B. This question paper consists of 6 pages including this page.

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4. Number the answers correctly according to the numbering system used in this question paper.
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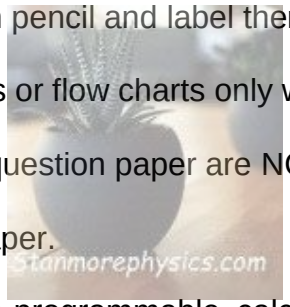
11. Write neatly and legibly.



SECTION A

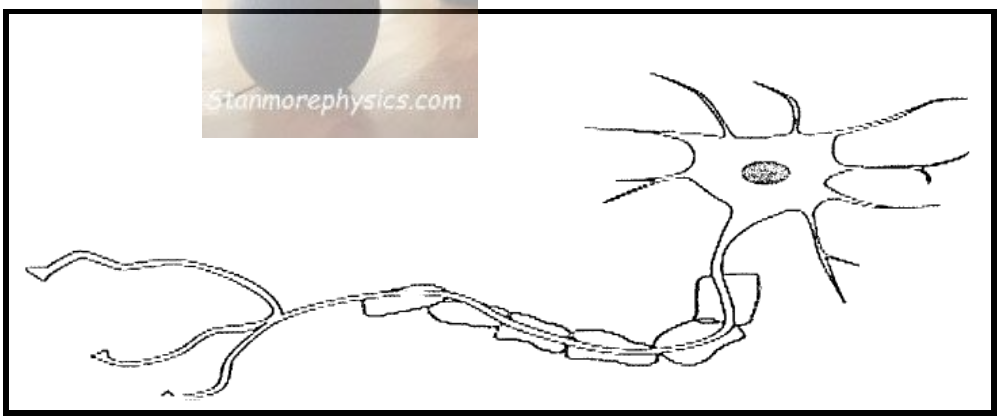
QUESTION 1

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 1.1.2) in your ANSWER BOOK, for example 1.1.3 D.

1.1.1 Which of the following tissues lines the nasal cavity and removes dust particles?

A Cuboidal
B Areolar
C Squamous
D Ciliated columnar

1.1.2 The diagram below shows a special type of animal cell



(i) It is found between the spinal cord and the effector muscles
(ii) It is only found in the central nervous system
(iii) It is myelinated
(iv) It is connected directly to the receptors

Which TWO of the above statements about this cell are BOTH INCORRECT?

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

(2 x 2) (4)

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) in the ANSWER BOOK.

1.2.1 A type of epithelial tissue lining the mouth and blood vessels

1.2.2 The type of epithelial tissue lining the alimentary canal

1.2.3 The type of muscle tissue found in the heart

1.2.4 A connective tissue found under the skin that insulates the body and acts as a packaging tissue

(4 x 1) **(4)**

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 1.3.2) in the ANSWER BOOK.

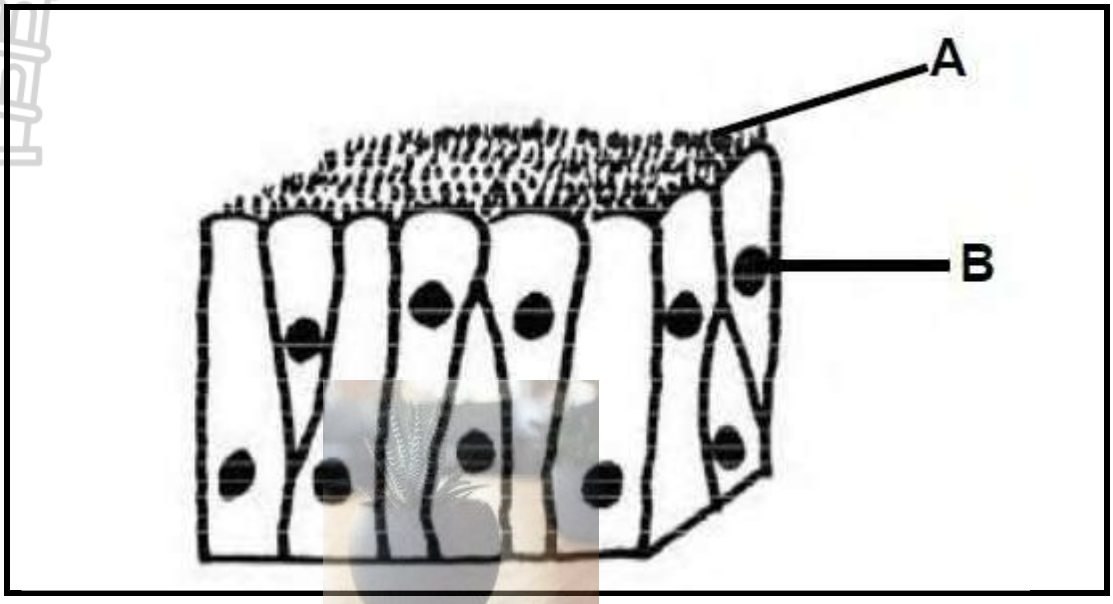
COLUMN I		COLUMN II
1.3.1	Joins muscle to bone	A: Cartilage B: Tendons
1.3.2	Mammalian tissue	A: Muscle B: Blood

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

SECTION B

QUESTION 2

2.1 The diagram below shows an animal tissue



2.1.1 Identify the tissue above (1)

2.1.2 Give the LETTER and the NAME of the part that:

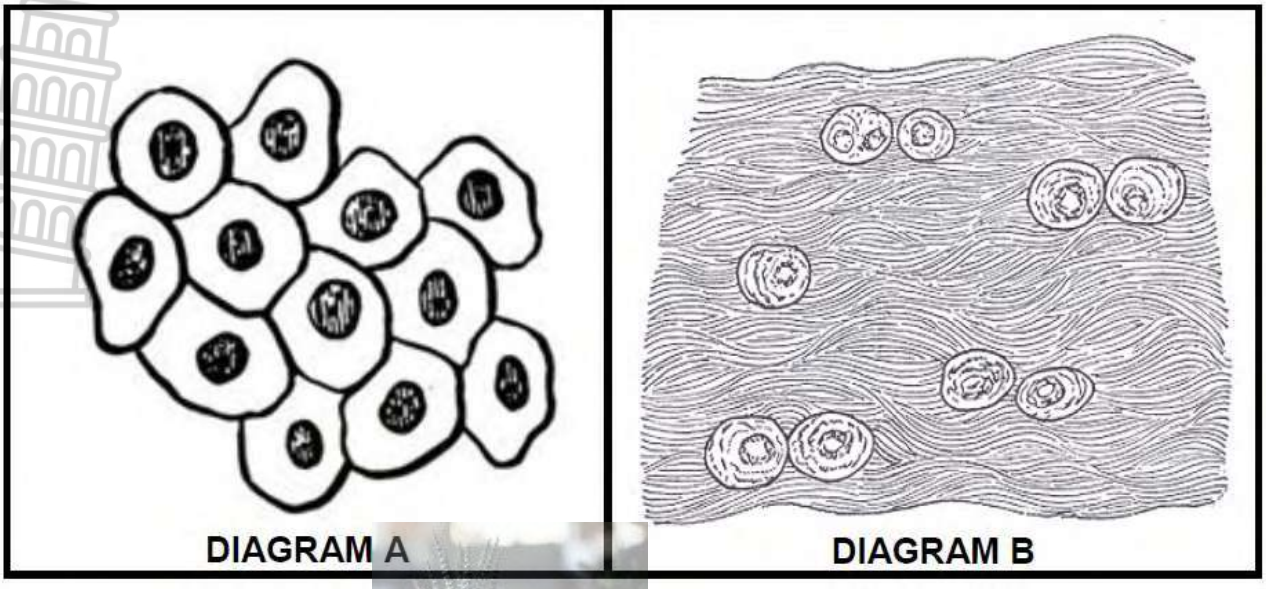
(a) controls all the activities of the cell (2)

(b) traps the dust in the above tissue (2)

2.1.3 Explain TWO ways in which the tissue mentioned in QUESTION 2.1.1 is structurally suited to perform its function (4)

[9]

3.1 The diagram below shows an animal tissue



3.1.1 Identify diagram:

(a) A (1)

(b) B (1)

3.1.2 State the TWO functions of DIAGRAM A (2)

3.1.3 Describe the structure of DIAGRAM B (2)

3.1.4 State ONE place where DIAGRAM B is found in humans (1)
(7)

3.2 Ligaments join bone to bone.
Explain why you would expect ligaments to be made of yellow elastic tissue rather than white fibrous tissue. **(2)**

TOTAL SECTION B: (18)
GRAND TOTAL: [30]

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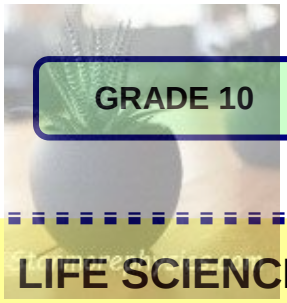

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: SUPPORT IN ANIMALS

MARKS: 30

TIME: 30 minutes

N.B. This question paper consists of 6 pages including this page.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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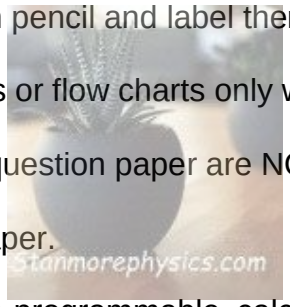


SECTION A

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 1.1.2) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 Which of the following parts forms axial skeleton?

A Arms,legs and vertebral column
B Skull,rib cage and sternum
C Lower limbs,skull and pelvic girdle
D Skull,vertebral column,ribs and sternum

1.1.2 Which of the following is a function of a pelvic girdle?

A Connect bone to bone
B Attaches arms
C Joins bones to muscles
D It attaches legs to the pelvic

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

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) in the ANSWER BOOK.

1.2.1 The bones that protects the spinal cord
1.2.2 The liquid which prevents friction in a joint
1.2.3 Bones that surround and protect the brain
1.2.4 The first vertebra that connects the neck to the skull

(4x1) **(4)**

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 1.3.2) in the ANSWER BOOK.

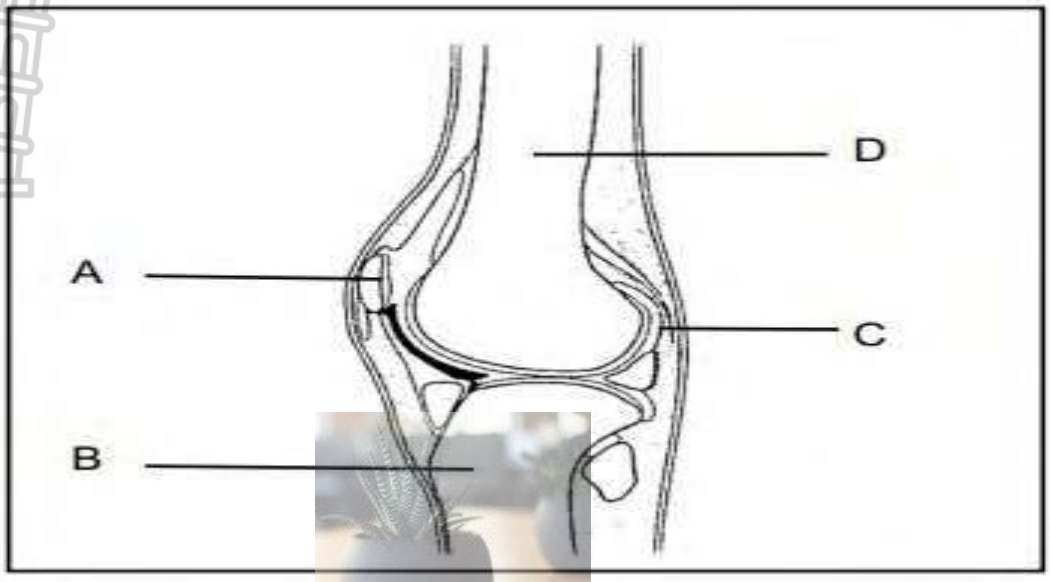
COLUMN I		COLUMN II
1.3.1	Caused by a lack of vitamin D or calcium	A: Rickets B: Osteoporosis
1.3.2	Found in all vertebrates	A: Exoskeleton B: Hydrostatic skeleton

(2x2) **(4)**

TOTAL SECTION A: (12)

SECTION B
QUESTION 2

2.1 The diagram below is a longitudinal section of the knee joint.



2.1. Identify bones:
(a) A (1)
(b) B (1)
(c) C (1)

2.2. Name the type of synovial joint shown in the diagram (1)

2.3 State ONE functions of part C. (1)

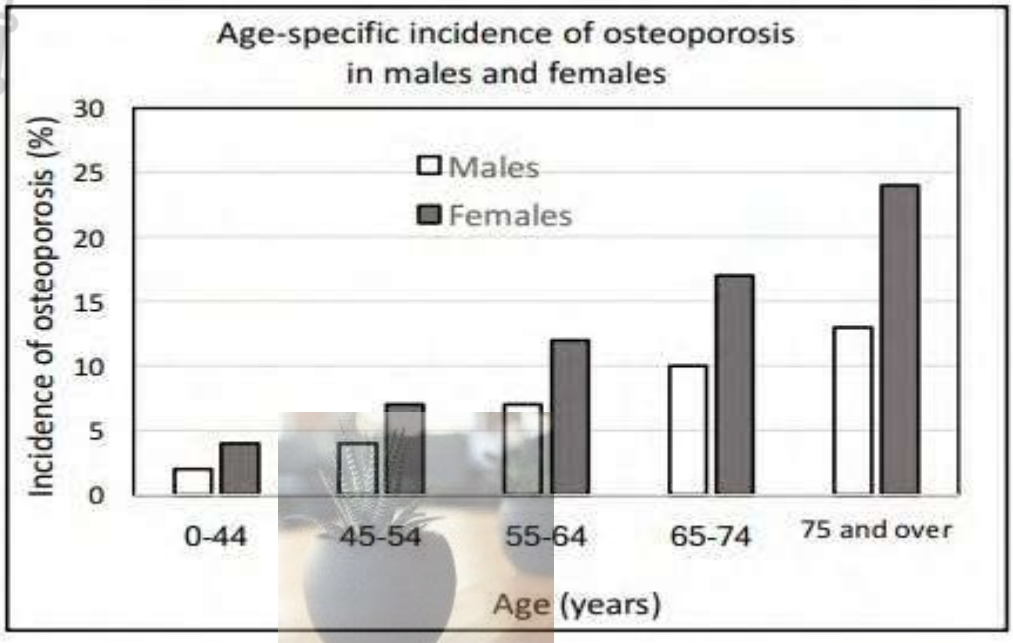
2.4 Describe the type of movement that is possible at the knee joint (2)

2.5. Ligaments join bone B and bone D.
Explain ONE ways in which the tissue making up the ligaments is structurally suited to perform its function (2)

[9]

QUESTION 3

3.1 The graph below shows the results of an investigation using a sample of men and women.



3.1.1 Identify:

(a) Independent variables (2)

(b) Dependant variable (1)

3.1.2 State TWO ways in which the reliability of the results could be improved, other than repeating the investigation. (2)

(5)

3.2 Make a labelled drawing of a longitudinal section of a long bone to show its structure. **(4)**

[9]

TOTAL SECTION B: 18

GRAND TOTAL: 30

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GRADE 10

LIFE SCIENCES
INFORMAL ASSESSMENT-TOPIC TEST: TRANSPORT SYSTEM IN MAMMALS

MARKS: 30

TIME: 30 minutes

N.B. This question paper consists of 4 pages including this page.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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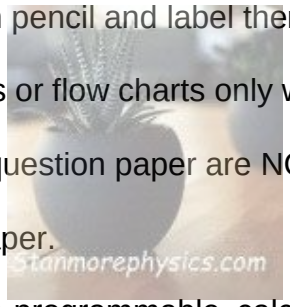


SECTION A

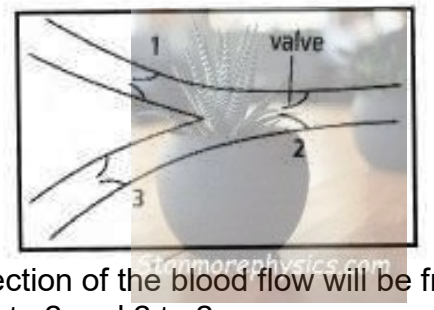
QUESTION 1

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 1.1.2) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 Which one of the following blood vessels supplies the heart tissue with oxygen and glucose?

A Coronary vein
B Pulmonary artery
C Coronary artery
D Aorta

1.1.2 The diagram below shows a longitudinal section of a vein.



The direction of the blood flow will be from…

A 1 to 2 and 2 to 3
B 3 to 2 and 2 to 1
C 2 to 1 and 2 to 3
D 1 to 2 and 3 to 2

(2×2) **(4)**

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 the ANSWER BOOK.

1.2.1 The chamber in the heart receives oxygenated blood from the left atrium

1.2.2 The membrane which encloses the heart

1.2.3 Largest artery in the body which leaves the left ventricle

1.2.4 Blood vessels that allows entry exit of substances through its walls

(1×4) **(4)**

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.

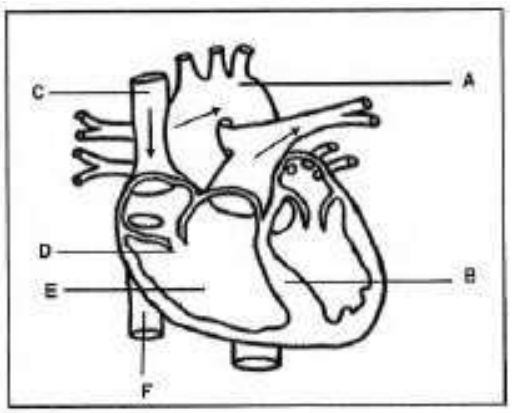
	COLUMN I		COLUMN II
1.3.1	Contraction of heart muscles	**A**	Diastole
		B	Systole
1.3.2	Lower chambers of the heart	**A**	Ventricles
		B	Atria

(2×2) **(4)**

TOTAL SECTION A 12

SECTION B
QUESTION 2

2.1 Study the diagram below shows a human heart.



2.1.1 Identify part:
(a) **D** (1)
(b) **E** (1)
2.1.2 State ONE function of part B (1)
2.1.3 Explain what happens in valve **A** and **F** during ventricular systole (1)
2.1.4 Explain what will happen if vessel **C** is blocked (2)
2.1.5 Tabulate TWO structural differences between vein and artery. (5)
[11]

QUESTION 3

3.1 The table below shows the percentage of the blood that passes through various organs.

Organs	**Amount of blood flow (%)**
Liver	25
Brain	15
Small intestine	15
Kidney	20
Others	X

3.1.1 Calculate the percentage of the blood flow at X (1)
3.1.2 Draw the pie chart to represent the information in the table above. (6)
[7]

TOTAL MARKS FOR SECTION B: (18)
GRAND TOTAL : [30]

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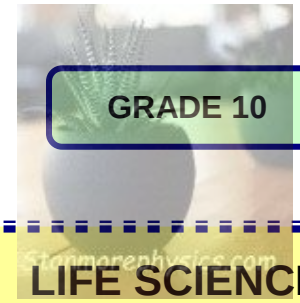

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: HISTORY OF LIFE ON EARTH

MARKS: 30

TIME: 30 Minutes

N.B. This question paper consists of 6 pages including this page.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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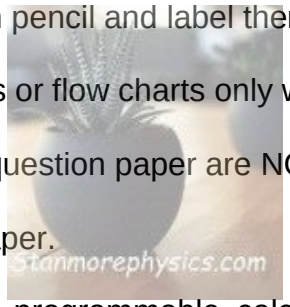


SECTION A

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 Palaeontology is the study of…

A the half-life of radioactive substances.
B continental drift.
C fossils
D changes

1.1.2 Study the following list of characteristics:

(i) Transitional species
(ii) Currently extinct
(iii) Living fossil
(iv) Belongs to the genus *Latimeria*

Which ONE of the following combinations of characteristics applies to the coelacanth?

A (i), (ii) and (iv) only
B (ii), (iii) and (iv) only
C (i), (ii) and (iii) only
D (i), (iii) and (iv) only **(4)**

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 1.2.3) in the ANSWER BOOK.

1.2.1 Complete disappearance of a species from Earth

1.2.2 Study of the past and the present distribution of individual species

1.2.3 The use of radioactive isotopes such as carbon-14 or potassium-40 to date fossils

(3)

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	Influence the History of life on Earth	A: Climate change B: Levels of oxygen
1.3.2	The type of organism regarded as a link between fish and amphibians	A: Dinosaur B: Coelacanth

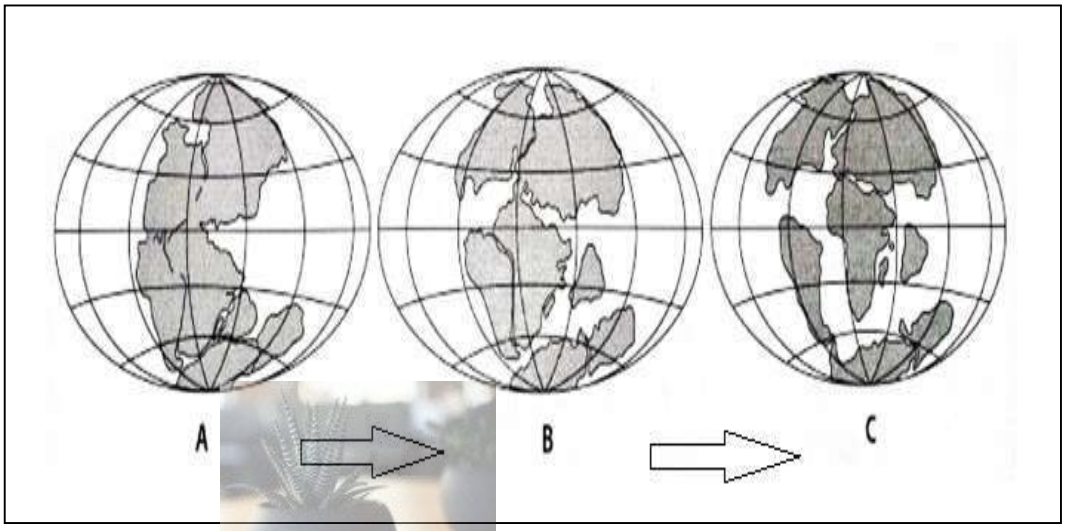
(2 x 2) **(4)**

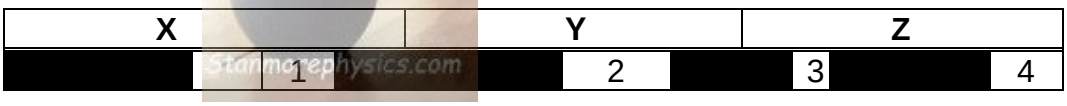
TOTAL SECTION A: 11

SECTION B

QUESTION 2

2.1 The maps show the changes that took place during a geological event.





2.1.1 State the name of the giant continent labelled **A**. (1)

2.1.2 Identify the geological event that is represented in the diagrams above. (1)

2.1.3 The TWO super-continents formed from the continent in Diagram **A.** (2)

2.1.4 Identify the eras corresponding to different stages in the geological event labelled:

(a) X (1)
(b) Y (1)
(c) Z (1)

2.1.5 The black bands below the map indicate warm periods and the white bands show periods of ice ages.

(a) How many warm periods occurred during this geological event? (1)

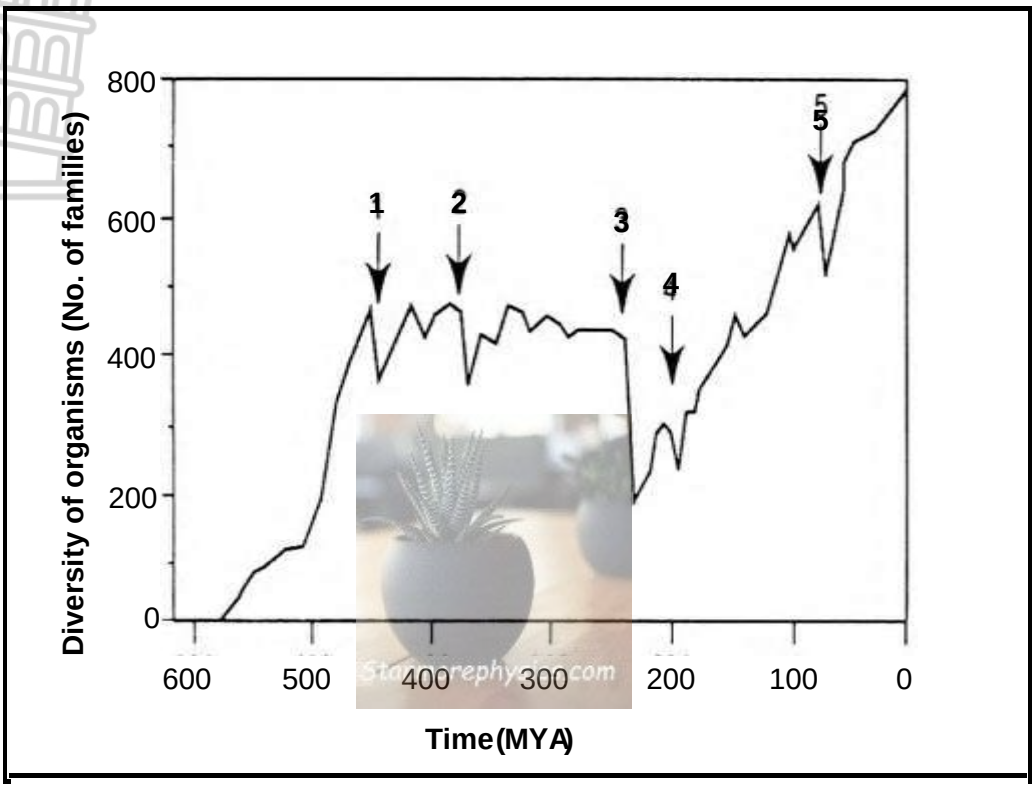
(b) State the ice age (**1**, **2**, **3** or **4**) which was of the longest duration? (1)

(c) State ONE possible consequence that these ice ages may have had on the diversity of life on earth. (1)

2.2 Suggest TWO reasons why there are gaps in the fossil record. **(2)**
[12]

QUESTION 3

3.1 The graph below shows the diversity of organisms over a period of Earth's history.



3.1.1 What do we call the events on the graph marked **1-5** (1)

3.1.2 According to the graph, which event caused the greatest decrease in the diversity of organisms? (1)

3.1.3 Scientists think that a volcano may have caused the decrease in diversity of organisms during the event marked **5**. Explain how a volcano could cause so many species to die out. (3)

3.1.4 Scientists have other theories about what may have caused the decrease in diversity of organisms at event marked **5**. Name TWO other theories. (2)

[7]

TOTAL SECTION B: 19

GRAND TOTAL: 30

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GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST:BIOSPHERE

MARKS: 30

TIME: 30 MINUTES

N.B. This question paper consists of 04 pages including this page.

INSTRUCTIONS AND INFORMATION

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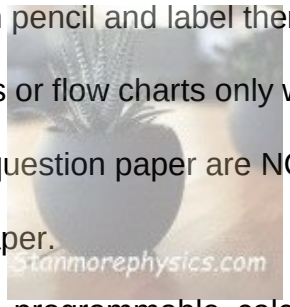


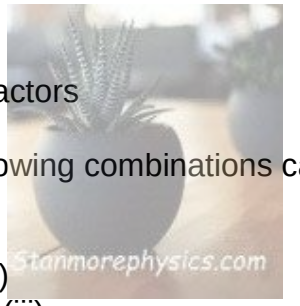
SECTION A

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 1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

1.1.1 The part of the earth where organism lived.....
A Atmosphere
B Lithosphere
C Biosphere
D Hydrphere

1.1.2 Study the list below
(i) Decomposers
(ii) Sunlight
(iii) Plants
(iv) Edaphic factors



Which of the following combinations can be considered as biotic factors

A (i) and (ii)
B (ii) and (iv)
C (i);(ii) and (iii)
D (i) ; (iii) and (iv)

(2X2) **(4)**

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) in the ANSWER BOOK.

1.2.1 Any region with the distinct climate together with all the organism that live in that

1.2.2 The part biosphere that is made up of the waters of seas, lakes and rivers

1.2.3 The soil and rocks forming the upper layers of the earth's surface

1.2.4 The study of all the interaction or relationship within the ecosystem

(1X4) **(4)**

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 1.3.2) in the ANSWER BOOK.

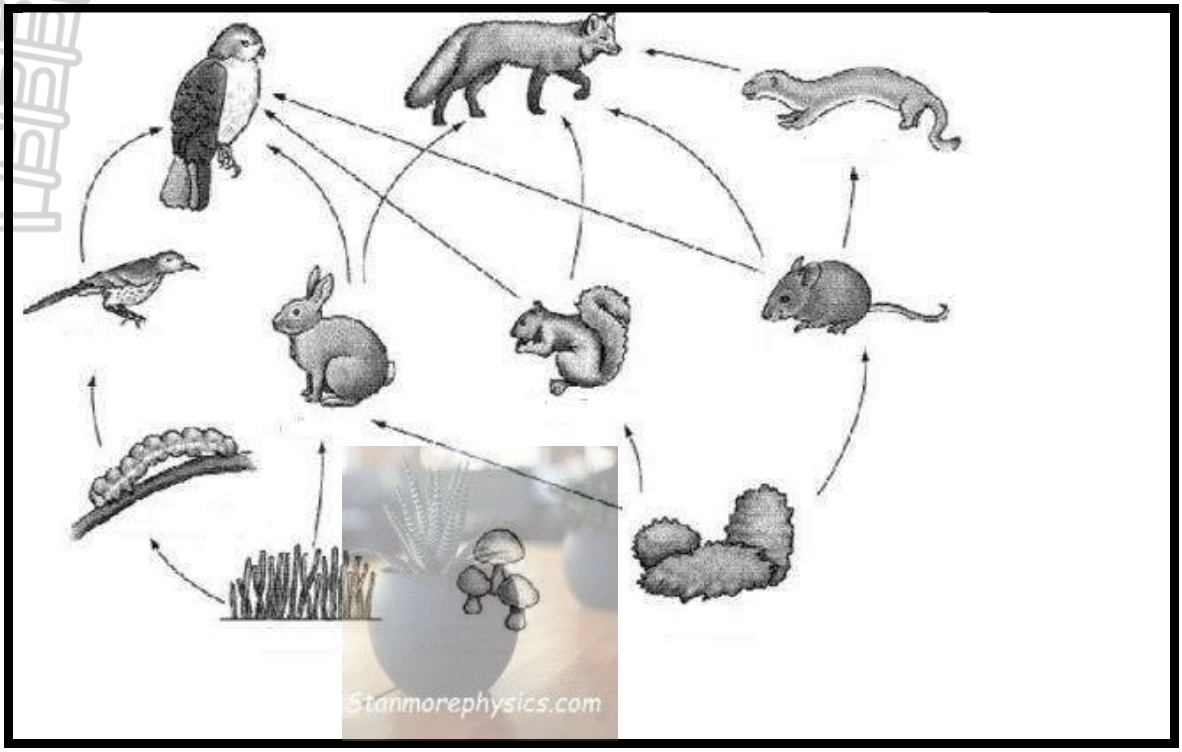
	COLUMN I		COLUMN II
1.3.1	Abiotic factors	**A**	Temperature
		B	Light
1.3.2	Living organism that do not naturally live in South Africa	**A**	Exoctic species
		B	Alien

(2X2) **(4)**

TOTAL SECTION A 12

SECTION B
QUESTION 2

2.1 The diagram below shows an ecosystem



2.1.1 What would happen if all the weasels were removed from the ecosystem? (2)

2.1.2 Use a food chain from the above ecosystem to draw a fully labelled pyramid of energy with FOUR trophic levels. (7)

[9]

QUESTION 3

3.1 The table below shows the results of an investigation which measured the average global carbon dioxide levels in the atmosphere over a five-year period .

Year	Carbon dioxide level (parts per million)
2004	376.0
2005	377.0
2006	379.5
2007	381.0
2008	381.5

3.1.1 Identify the dependent variable in the above investigation? (1)

3.1.2 Calculate the increase in carbon dioxide from 2004 to 2008. Show all calculations. (2)

3.1.3 Draw a line graph to show the change in carbon dioxide levels over time. (6)

TOTAL MARKS FOR SECTION B: 18
GRAND TOTAL: 30

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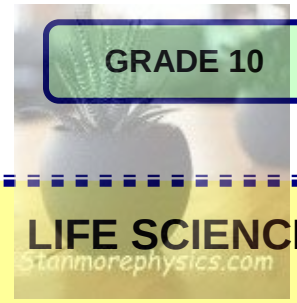
GRADE 10



LIFE SCIENCES

INFORMAL ASSESSMENT-TOPIC TEST: BIODIVERSITY AND CLASSIFICATION

MARKS: 30

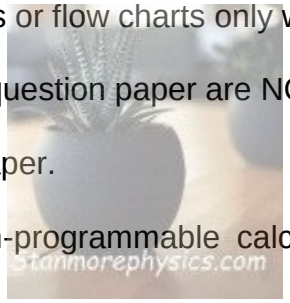
TIME: 30 Minutes

N.B. This question paper consists of 5 pages including this page.

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. 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. Make 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 must use a non-programmable calculator, protractor and a compass, 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 1.1.3) in your ANSWER BOOK, for example 1.1.4 D.

1.1.1 Which of the following sequences is correct according to Leanneus classification system?

A Kingdom, class, phyla, order, family, genus, species
B Phyla, class, kingdom, family, genus, species, order
C Kingdom, phyla, class, order, familly, genus, species
D Kingdom, phyla, class, order, genus, family, species

1.1.2 Below is a list of descriptions in terms of classification systems used by Taxonomists.

i) It is the kingdom into which plants belong
ii) It is made up of ancient anaerobic bacteria
iii) It consists of protists
iv) It is one of the domains in the Three -Domain classification

Which one of the following forms the correct combination about the term Archae?

A ii and iv only
B i and iii only
C ii, iii and iv only
D iii and iv only (2 x 2) **(4)**

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) in the ANSWER BOOK.

1.2.1. The Kingdom into which bacteria belongs in terms of Five-kingdom classification.

1.2.2. Organisms without a definite nucleus

1.2.3 Organisms that feed on dead decaying organic matter

1.2.4. Organisms characterised by the presence of the vertebral column

(1 x 4) **(4)**

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 1.3.2) in the ANSWER BOOK.

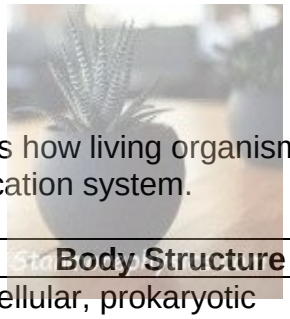
	COLUMN I	COLUMN II
1.3.1	Process used by plants to manufacture their own food	A: Chemosynthesis B: Photosynthesis
1.3.2	The genus name for chimpanzee in the scientific name *Pan troglodytes*	A: *Pan* B: *Troglodytes*

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

TOTAL SECTION A: 12

SECTION B

QUESTION 2



2.1 The table below shows how living organisms are classified according to the Five Kingdom classification system.

Kingdom	Body Structure	Nutrition
Monera	Unicellular, prokaryotic	Autotrophic / heterotrophic
(P)	Unicellular / multicellular, eukaryotic	Autotrophic / heterotrophic
Fungi	Multicellular, eukaryotic, cell walls containing **(Q)**	Heterotrophic
Plantae	Multicellular, eukaryotic, cell walls containing **(R)**	**(S)**
Animalia	Multicellular, eukaryotic,, no cell walls	Heterotrophic

2.1.1. State the term represented by each of the following letters as they appear in the above table

(a) P (1)
(b) Q (1)
(c) R (1)
(d) S (1)

2.1.2 Define the term eukaryotic. (1)

2.1.3 Both fungi and Animalia are heterotrophic.
State the type of digestion in the two kingdoms respectively (2)

2.1.4. Name the organelle that is present in plant cells but not in fungi, that makes plants autotrophic. (1)

[8]

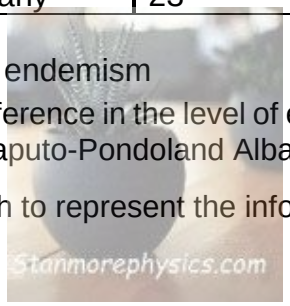
QUESTION 3

3.1 Read the extract below and answer the questions that follow.

> South Africa forms approximately one percent of the earth's total surface, yet it is very rich in biodiversity. It holds a third place in the world in terms of biodiversity. Many of these species are endemic.

The table below shows three biodiversity hotspots in South Africa as well as the percentage of endemism for each hotspot

Biodiversity hotspot	Level of endemism (%)
Cape-Floristic Kingdom	80
Succulent Karoo	40
Maputo-Pondoland-Albany	23



3.1.1 Define the term endemism (2)

3.1.2. Calculate the difference in the level of endemism between the Cape Floristic Kingdom and Maputo-Pondoland Albany. (2)

3.1.3. Draw a bar graph to represent the information in the table above (6)

[10]

TOTAL SECTION B: 18

GRAND TOTAL: 30

PART B

2. BIODIVERSITY AND CLASSIFICATION

2.1 Biodiversity

- Refers to the variety of life forms that exist on Earth.

2.2 History of classification

2.2.1 The two-kingdom system

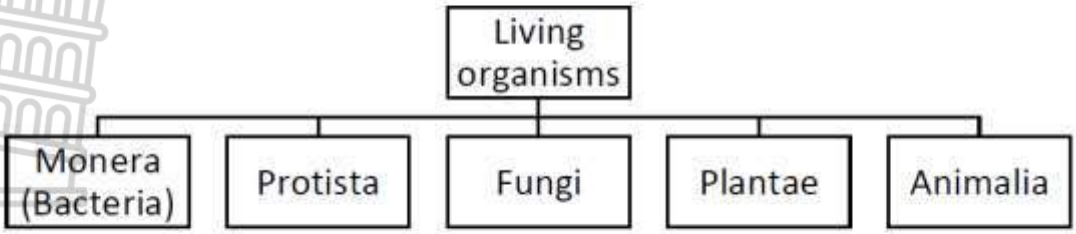
- Simple classification systems were based on shared physical characteristics.
- As information increases classification systems became more complex.
- A Swedish botanist, Carl Linnaeus, classified living organisms into two kingdoms i.e. Plantae (plants) and Animalia (animals).
- Linnaeus developed a classification system where seven categories under each kingdom are used.
- A kingdom is divided into phyla in animals but divisions in plants.

Table to show the basic classification of two organisms

Division	Lion	Pine tree
Kingdom	Animalia	Plantae
Phylum/Division	Chordata	Pteridophyta
Class	Mammalia	Gymnospermae
Order	Carnivora	Coniferales
Family	Felidae	Pinaceae
Genus	*Panthera*	*Pinus*
Species	*leo*	*ponderosa*

2.2.2 The five-kingdom system

- The most common classification system, the five-kingdom system was proposed by Robert Whitaker in 1969.



2.2.3 Naming of living organisms

- Carl Linnaeus designed a **binomial** system for naming of living organisms.
- The first word of the name is the **genus** and the second word is the **species.**
- The genus name is written with a capital letter and the species with a small letter e.g. *Panthero leo.*
- If the name is written by hand, the genus and species names are underlined e.g. Panthero leo.
- When typing the name, the whole name is typed in italics e.g. *Panthero leo.*

2.2.4 Biological keys

- A biological key e.g. a **dichotomous key** is an instrument used to classify living organisms.
- A dichotomous key always gives two choices at each step.
- At each step two statements are given based on the characteristics of the organism.
- If the right option is chosen at each step it will lead to the name of the organism.

2.2.4.1 Example of a dichotomous key

1	a. Three pairs of legs present	Insecta
	b. More than three pairs of legs present	Go to 2
2	a. Four pairs of legs present	Arachnida
	b. More than four pairs of legs present	Go to 3
3	a. Two pairs of antennae present	Crustacea
	b. One pair of antennae present	Go to 4
4	a. Antennae branched at tip	Pauropoda
	b. Antennae unbranched	Go to 5
5	a. Two pairs of legs on each body segment	Diplopoda
	b. One pair of legs on each body segment	Go to 6
6	a. Twelve pairs of legs present, eyes absent	Symphyla
	b. More than twelve pairs of legs present	Chilopoda

2.2.5 Differences between prokaryotes and eukaryotes:

Prokaryotes	Eukaryotes
Organisms with cells with no true nuclei	Organisms with cells that have true nuclei
Their genetic material /DNA is not enclosed by a nuclear membrane and occurs free in the cytoplasm	Their genetic material /DNA is enclosed by a nuclear membrane and occurs free in the cytoplasm
No true organelles occur in the cytoplasm	True organelles occur in the cytoplasm
Monera are prokaryotes	Protista, Fungi, Plantae and Animalia are eukaryotes

2.2.6 Main groups of organisms

	KINGDOM				
	Monera (Bacteria)	**Protista**	**Fungi**	**Plantae (Plants)**	**Animalia (animals)**
Characteristics	• Prokaryotes • Single-celled (unicellular) • Micro-organisms • Heterotrophic and autotrophic • Asexual reproduction	• Eukaryotes • Most are unicellular but some are multicellular • Heterotrophic or autotrophic • Asexual reproduction, some reproduce sexually	• Eukaryotes • Some are unicellular but most are multicellular • Heterotrophic, most are saprophytes • Asexual reproduction, some reproduce sexually	• Eukaryotes • Multicellular • Most plants are autotrophic • Asexual reproduction by means of spores or sexual reproduction by means of gametes	• Eukaryotes • Multicellular • Do not have cell walls • Animals are heterotrophic • Reproduction is sometimes asexual but mostly sexual by means of gametes
Examples	Bacteria	Protozoa, algae, slime moulds and water moulds	Yeast, mushrooms, moulds	Mosses, ferns, conifers, flowering plants	Sponges, jellyfish, flatworms, roundworms, earthworms, snails, starfish, insects, spiders, fish, mammals etc.

3. HISTORY OF LIFE ON EARTH

3.1 Changes in the composition of the atmosphere

- When the earth formed, oxygen levels in the atmosphere were very low.
- Fossil records show that the first living organisms i.e. bacteria (prokaryotes) were anaerobic i.e. they did not need oxygen to survive.
- Blue-green bacteria appeared, and they used carbon dioxide in the atmosphere and released oxygen i.e. they could produce their own food through photosynthesis.
- The levels of oxygen started to increase in the atmosphere and aerobic organisms started to develop.
- The increase in oxygen resulted in an increased variety of living organisms on earth.

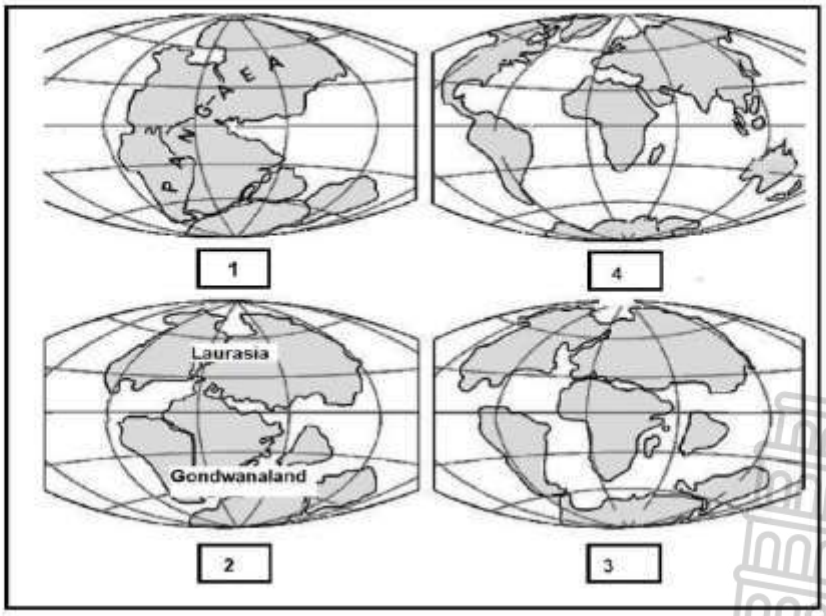
3.2 Changes in climate e.g. the ice age:

- An ice age is a long geological period of drastic decrease in temperature of the earth's surface and atmosphere.
- Many species died out during the ice ages and some migrated to warmer areas on earth.
- When the ice forms, the level of the ocean will decrease exposing more land.
- Ice ages therefore affected life on earth due to the extinction and redistribution of species.

3.3 Geological events

- The theory of **continental drift** proposes that the earth's continents moved and are still moving slowly.
- About 250 million years ago all continents were joined to form one large continent, called Pangaea.
- Pangaea eventually broke up into two supercontinents i.e. Laurasia in the north and Gondwanaland in the south.
- These two supercontinents eventually broke up further into the continents that we know today.
- By means of biogeography evidence has been found that the continents were once joined. **Biogeography** is the study of the present-day distribution of organisms.

Study the diagrams below showing the movement of the continents



3.4 The geological timescale

- Scientists estimate that the earth is about 4,6 billion years old.
- The geological timescale divides the earth's history into three main eras i.e. ***Paleozoic, Mesozoic*** and ***Coenozoic eras.***
- Each of the three eras is divided into periods *(you do not need to memorise the names of the periods)*
- The period that precedes the Paleozoic era is known as the ***Precambrian***.

ERA	PERIOD	MILLIONS OF YEARS AGO (mya)	PLANTS AND ANIMALS
Cenozoic	Quaternary	2	• Modern humans • Modern mammal species evolve • Extinction of large mammals e.g. mammoths
	Tertiary	65	• Birds, mammals and insects • Primates (apes)
Mesozoic	Cretaceous	140-65	• Extinction of dinosaurs • Flowering plants spread
	Jurassic	190-140	• Dinosaurs dominant • First birds evolve
	Triassic	250-190	• First dinosaurs • First mammals • Gymnosperms are the dominant plants
Paleozoic	Permian	280-250	• Increase in reptiles • Gymnosperms
	Carboniferous	345-280	• Increase in amphibians • First reptiles • Ferns dominate
	Devonian	400-345	• First insects • First amphibians
	Silurian	435-400	• First plants and animals on land • Mosses
	Ordovician	515-435	• Algae dominant
	Cambrian	570-515	• Explosion of most animal groups • First vertebrates • Invertebrates
Precambrian		4600-570	• Eukaryotes • Prokaryotes • First invertebrates

3.5 Cambrian explosion

- The early forms of most animal groups appeared in the Cambrian period.
- 'Cambrian explosion' refers to the diversity of life forms that appeared in a relatively short period of time.

3.6 Mass extinctions

- A mass extinction occurs when many species disappear over the same period of time.
- There have been five mass extinctions throughout history, two of which are particularly important i.e. the extinction of about 90% of all life on earth (250 mya) and the extinction of many species, including dinosaurs (65 mya).
- The present time has been called the sixth extinction because of the negative effect of humans on the environment.

3.7 Fossil formation and methods of dating

- A fossil is a complete organism or the remains, imprints or traces of an organism that is usually preserved in rocks.
- Fossils are mainly found in sedimentary rocks.
- Sedimentary rock is formed when clay and sand particles are carried from one place to another by water and wind.
- Over thousands of years these sediments pile up, harden and form sedimentary rock.
- Fossils are also found in tree resin, ice and volcanic lava.

3.7.1 Ideal conditions for fossil formation (fossilisation)

- The organism must be buried immediately after it dies.
- The condition in the sediment needs to be acidic and contain no oxygen.
- The organism needs to have some hard parts e.g. an exoskeleton, shell, teeth etc.

3.7.2 The formation of fossils in sedimentary rock

- The plant or animal dies and is rapidly covered with sediment.
- Soft tissues decay with the help of bacteria and microorganisms.
- Hard body parts remain, and the organic material is hardened or replaced by minerals.
- More layers of sediment cover the dead animal or plant.
- Sediment hardens and the layers become compressed and form sedimentary rock.

3.7.3 Fossil dating:

- The age of fossils can be determined through two methods i.e. radiometric dating and relative dating.

3.7.3.1 Radiometric dating

- This type of dating uses different instruments to measure the radioactive elements e.g. uranium, carbon etc. in fossils or rocks.
- The more the radioactive element in a fossil has decayed, the older the fossil.
- For fossils older than 50 000 years the age of the rocks in which the fossils are embedded is determined.
- Carbon 14 dating is used to measure the age of fossils that are younger than 50 000 years.

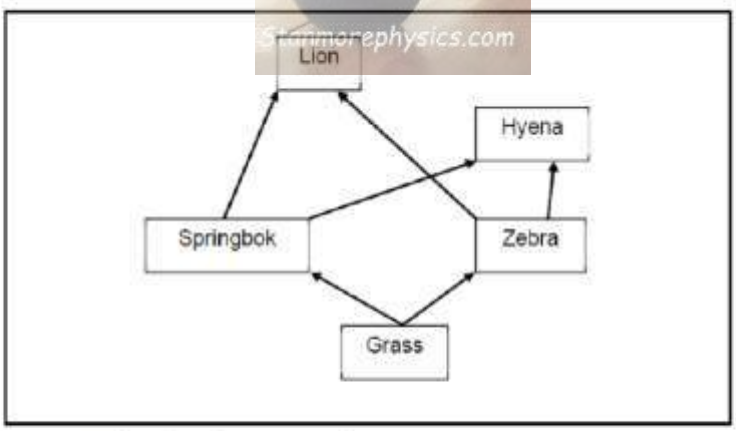
3.7.3.2 Relative dating

- As sediment is laid down on top of each other, the oldest rock will be below the upper layers.
- Older fossils will occur in sedimentary layers deep down and younger fossils will occur in layers closer to the surface of the earth.

4. REVISION QUESTIONS:

- Work through and answer the questions below.
- Please note that **HIGHER ORDER questions** are in **BOLD** and marked with a **(*)**

4.1 The diagram below shows a food web.



4.1.1 Name the organism that represents a...
(a) producer (1)
(b) primary consumer (1)

4.1.2 Explain what may happen if the hyena was removed from this ecosystem. (3)

4.2 Read the extract below.

Carolus Linnaeus established a hierarchical classification system of grouping similar organisms together. He grouped from broad groups called Kingdoms down to the smallest group called species.
Using his system, a lion is fully classified as follows:
Animalia, Chordata, Mammalia, Carnivores, Felidae, panthera leo.

4.2.1 According to Linnaeus' system, which class does the lion belong to? (1)
4.2.2 The lion's scientific or binomial name, panthera leo, has been written incorrectly. Rewrite it correctly. (2)

4.3 Read the extract below.

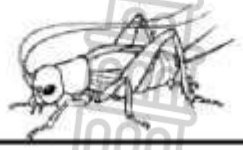
The Cape floral kingdom is the smallest of the world's floral kingdoms. It is home to more endemic (species that occur in one region and nowhere else in the world) and indigenous plants than in any other region in South Africa. Approximately 70% of the 9 000 plant species in this area are found nowhere else in the world.
The vegetation of this biome, which is mostly small bushes, grows in nutrient poor soil. They also survive the long dry summer conditions, as well as frequent fires.
The flora of the Cape is threatened, amongst others, by habitat destruction by humans. Already numerous species are extinct from this biome. Hence, its conservation is a national conservation priority.
In a bid to save this biome, there are several projects aiming at encouraging responsible travel to natural areas in order to conserve the environment, as well as improving the well-being of local communities.

4.3.1 What is a biome? (2)
4.3.2 What is the name of the biome in the extract above? (1)
***4.3.3 Give TWO reasons for the habitat destruction by humans. (2)**
***4.3.4 Calculate the total number of species that are endemic to this biome. Show your working. (3)**

4.4 Esethu and Christine read the extract below in a magazine.

HOW IS A CRICKET'S CHIRP RELATED TO TEMPERATURE?

Crickets are insects. Like all living things they have many chemical reactions going on inside their bodies, such as reactions that allow muscles to contract to produce chirping. Crickets, like all insects, are cold blooded and take on the temperature of their surroundings. This affects how quickly these chemical reactions that allow muscles to contract can occur.



They decided to conduct an investigation.

- They took 4 wooden boxes and placed 1 cricket in each box.
- Each box was also fitted with a temperature-controlled heater. These boxes were labelled A, B, C and D.
- The heater in box A was set at 10 °C, box B was set at 15 °C, box C at 20 °C and box D at 25 °C.
- Each box was left for 30 minutes for the crickets to get used to the temperature.
- They then recorded the number of chirps per minute.

Their results are shown in the table below.

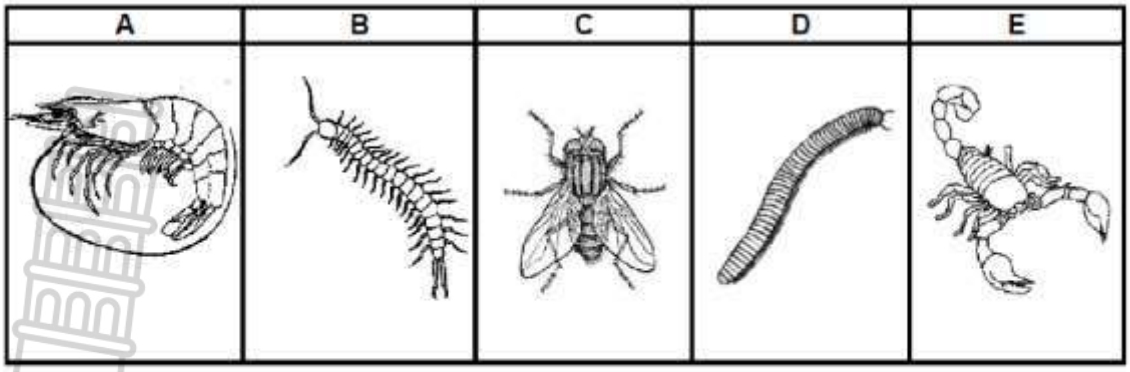
Temperature (°C)	Chirps per minute
10	40
15	75
20	105
25	140

***4.4.1 Write a suitable aim for the investigation. (2)**
***4.4.2 Name TWO factors that Esethu and Christine need to control to make their investigation more valid. (2)**
***4.4.3 Draw a line graph to represent the data shown in the table above. (6)**
***4.4.4 State TWO ways in which Esethu and Christine could improve the reliability of their investigation? (2)**
***4.4.5 In which season would you expect to hear more cricket chirping? Give a reason for your answer. (2)**

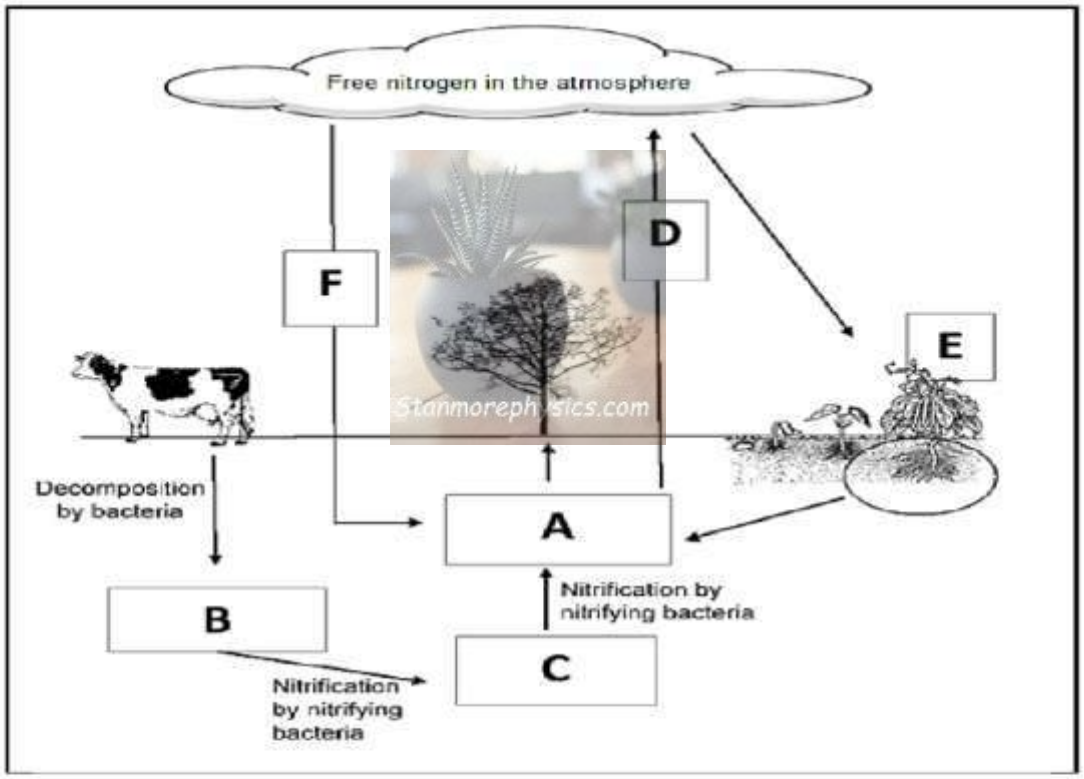
4.5 The table below shows some characteristics of arthropods. Use the information in the table to find the class of the animals labelled **A** to **E**.

CLASS	LEGS	WINGS	BODY REGIONS	ANTENNAE
Insecta	Three pairs	Some have	Head, thorax, abdomen	Yes
Arachnida	Four pairs	No	Cephalothorax, abdomen	No
Crustacea	Five to seven pairs	No	Cephalothorax, abdomen	Two pairs
Diplopoda	More than ten pairs, two pair per segment	No	Long worm-like, cylindrical	One pair, short
Chilopoda	More than ten pairs, one pair per segment	No	Long, worm-like, flattened	One pair, long

4.5.1 Match the correct letter of the organisms **A** to **E** to the class described in the table and give reasons why it belongs to that class. (10)



4.6 Study the diagram showing the nitrogen cycle below.



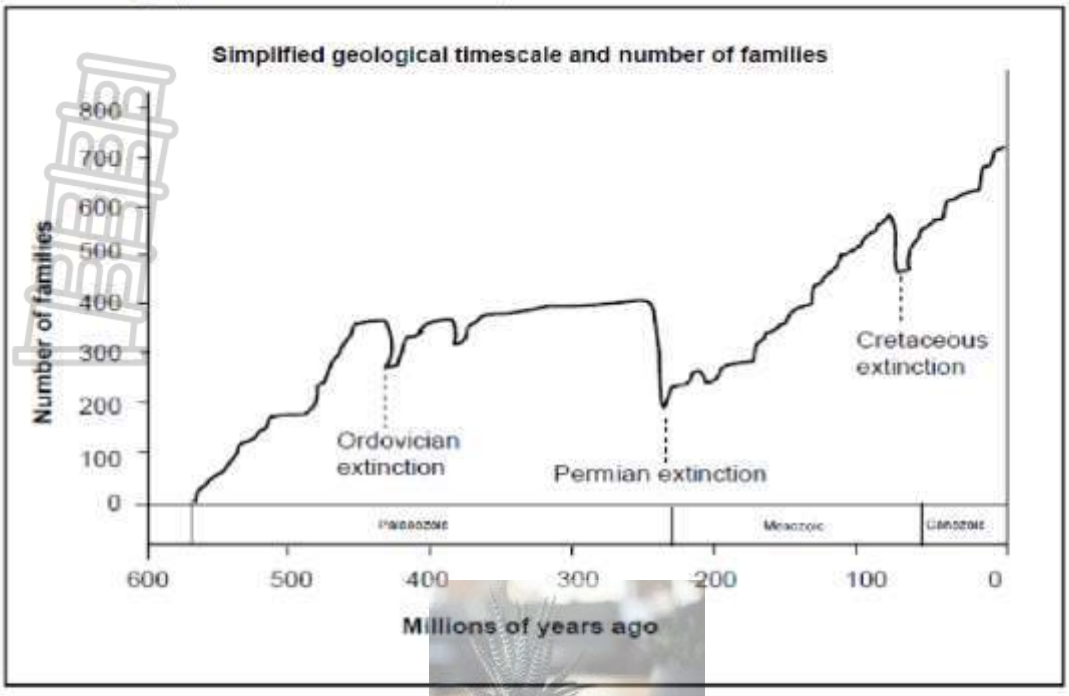
4.6.1 Identify the nitrogenous compound represented by labels **A**, **B** and **C**. (3)

4.6.2 Name the process labelled **D** by which nitrogen is returned to the atmosphere. (1)

4.6.3 Name the plants labelled **E** that form a symbiotic relationship with nitrogen-fixing bacteria. (1)

4.6.4 Name the weather phenomenon labelled **F** that is responsible for forming nitrates in the atmosphere. (1)

4.7 The graph below shows the major extinction events.



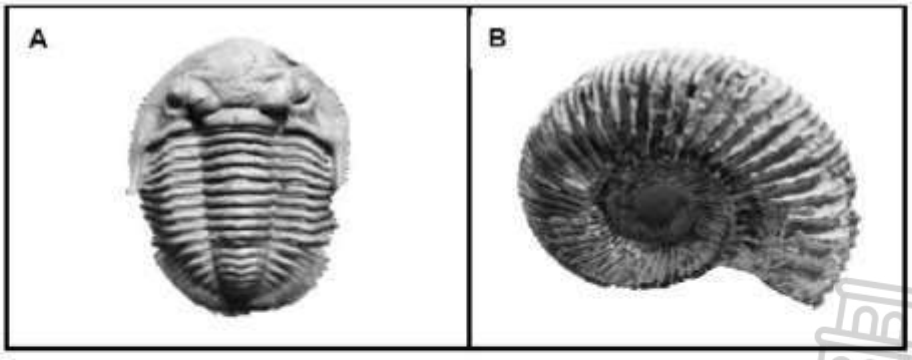
4.7.1 When did the Cenozoic era begin? (1)

4.7.2 Which mass extinction took place towards the end of the Palaeozoic era? (1)

***4.7.3 Approximately how many families of species died out at the end of the Palaeozoic era? Show ALL working. (3)**

***4.7.4 Explain why the number of families of organisms rapidly increased after each mass extinction. (4)**

4.8 The images below are two different fossils.



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

4.8.2 Name TWO other ways that fossils are formed, other than in sedimentary rock. (2)

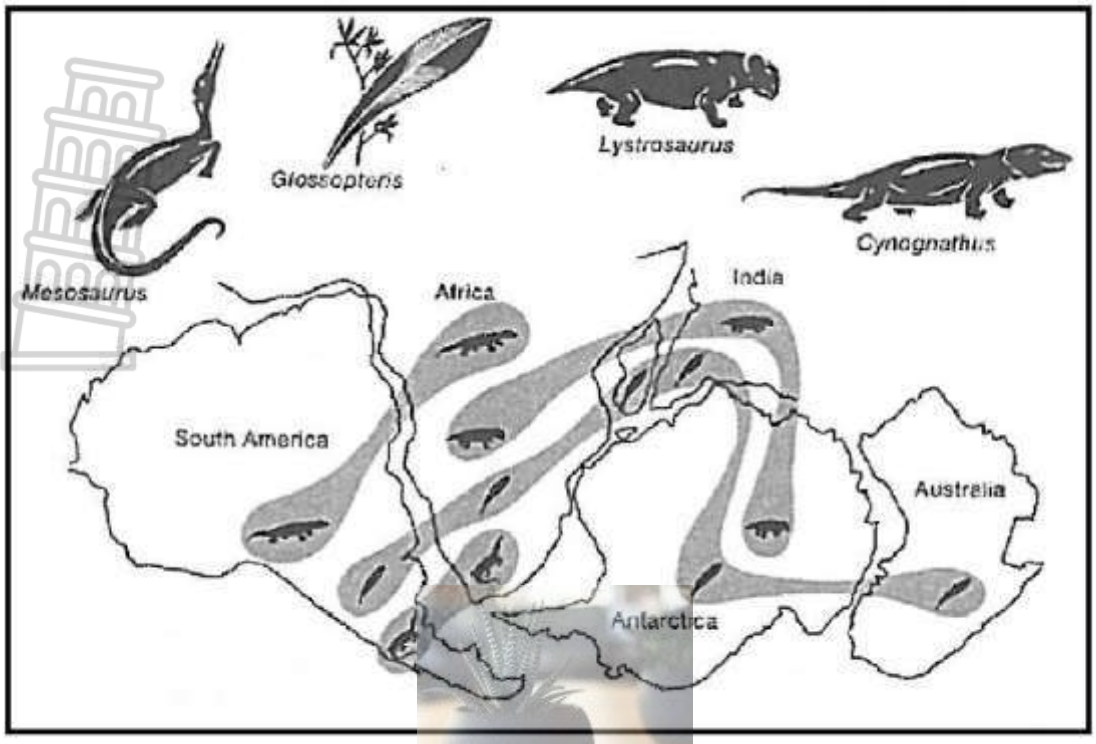
4.8.3 Scientists use radioactive isotopes such as carbon-14 or potassium-40 to date fossils. What is this method of dating fossils called? (1)

4.9 The table below shows the timescale of a part of Earth's history.

MYA	Era	Period	Fossils
298–251	Paleozoic	Permian	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, Land plants, Corals, Amphibians, Insects, many more reptiles, Cone bearing plants
323–298		Pensylvanian	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, Land plants, Corals, Amphibians, Insects, Reptiles
358–323		Mississippian	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, Land plants, Corals, Amphibians, First insects, First reptiles
419–358		Devonian	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, Land plants, Corals, Insects, First amphibians
443–419		Silurian	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, Land plants, Corals
485–443		Ordovician	Trilobites, Ammonites, Fish, Animals with shells, Sponges, Jellyfish, First land plants
541–485		Cambrian	Trilobites, First fish, First animals with shells, Sponges, Jellyfish

4.9.1 Which ...
(a) period saw the arrival of the first land plants? (1)
(b) group of animals survived the longest in this era? (1)
4.9.2 What do we call a timescale like the one above? (1)
4.9.3 In which period above did an explosion (a large increase) in the number and diversity of fossils in the fossil record occur? (1)

4.10 Study the map below.



4.10.1 What do we call the study of the distribution of individual species? (1)

4.10.2 Name the supercontinent evident in the diagram. (1)

***4.10.3 Using the diagram above, explain how fossil evidence supports the fact that Africa and South America may have once been joined as part of the same continent. (2)**

4.10.4 Which organism's fossil remains are found on all the land masses shown above? (1)

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

CURRICULUM DIRECTORATE

GRADE 10 -12

INFORMAL ASSESSMENT:

JIT TERMS 1- 4

MARKING GUIDELINES

LIFE SCIENCES

GRADE 10

2024

SCHOOL NAME:	
LEARNER NAME:	

TABLE OF CONTENTS:

KWAZULU-NATAL PROVINCE
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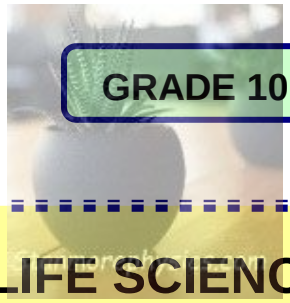

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST:

CHEMISTRY OF LIFE

MARKING GUIDELINES

MARKS: 30

TIME: 30 minutes

This marking guideline consists of 5 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
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17. **Caption**
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SECTION A

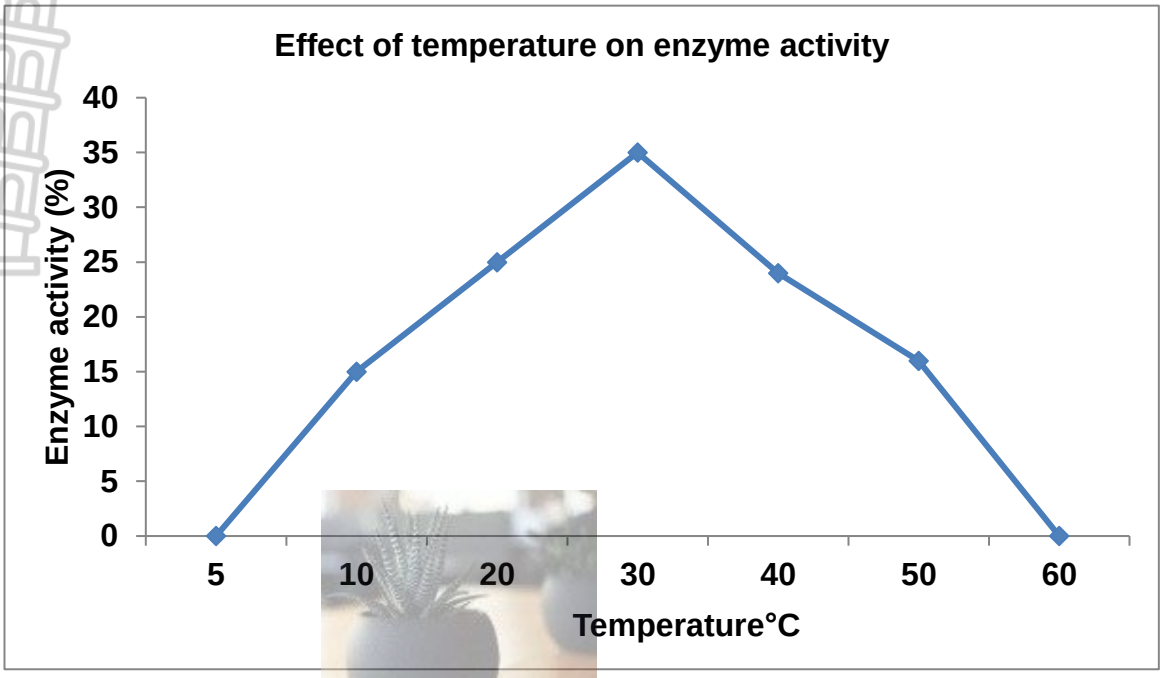
QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	B✓✓		
			(2x2)	**(4)**
1.2	1.2.1	Carbohydrates✓		
	1.2.2	Atom✓		
	1.2.3	Chlorosis✓		
	1.2.4	Enzyme✓	(1 x 4)	**(4)**
1.3	1.3.1	None✓✓		
	1.3.1	A only✓✓		
			(1x2)	**(4)**
			TOTAL SECTION A:	**12**

SECTION B
QUESTION 2

2.1	2.1.1	(a)	Temperature✓	(1)
		(b)	Enzyme activity✓	(2)

2.1.2



Marking Rubric:

Feature	Mark allocation
Caption (**C**)	1
Correct type of graphs(**T**)	1
Scale on both axis (**S**)	1
Labels on both axis (**L**)	1
Plotting (**P**)	0-5 points plotted Correct: 0 1-6 points plotted correct: 1 All 7 points plotted correct: 2

(6)

2.1.3 Increase sample size✓
Repeat the investigation several times✓
Calculate the average ✓
(Mark the first one only)

(1)
(9)

QUESTION 3

3.1	3.1.1	Fatty acids✓ and glycerol✓	(2)
	3.1.2	Scurvy✓	(1)
	3.1.3	30/345✓ x100% = 8.7%✓	(2)
	3.1.4	B✓	(1)
	3.1.5	Cereal B has least amount of vitamin C✓	(1)
	3.1.6	Positive test for protein✓ Protein is present in the sample✓	(2) **(9)**

TOTAL SECTION B: (18)
GRAND TOTAL: [30]

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST:

CELLS-BASIC UNIT OF LIFE

MARKING GUIDELINES

MARKS: 30

TIME: 30 minutes

This marking guideline consists of 4 pages

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.2.3	A✓✓		
			(2 x 2)	**(4)**
1.2	1.2.1	Mitochondrion✓		
	1.2.2	Active transport✓		
	1.2.3	Endoplasmic reticulum✓		
	1.2.4	Tonoplast✓	(1 x 4)	**(4)**
1.3	1.3.1	A only✓✓		
	1.3.2	Both A and B ✓✓	(2 x 2)	**(4)**

TOTAL SECTION A: **12**

SECTION B
QUESTION 2

2.1	2.1.1	X ✓	(1)
	2.1.2	Large vacuole present✓ Chloroplast present✓ Cell wall present✓ Regular shape✓ **(Mark first TWO only)**	(2)
	2.1.3	Deoxyribonucleic acid / DNA✓	(1)
	2.1.4	C✓	(1)
	2.1.5	- Substances will not be able to enter or leave the cell✓ - Waste substances will accumulate inside the cell✓ - Useful substances will not be able to enter the cell✓ - Leading to a shortage of useful substances inside the cell✓ - Resulting in the cell death/dying✓ **(Any FOUR)**	(4)

QUESTION 3

3.1 The movement of water molecules across a selectively permeable membrane ✓ from an area of high concentration to low concentration.✓ (2)

3.2 a) The sugar solution was raised✓ / became higher/ increased (1)
b) The level of the tap water stayed the same ✓ (1)

3.3 Same size of beaker✓
Same amount of water✓
Same type of potato✓
Same person doing investigation✓
Same technique✓
(Mark the FIRST ONE only) (1)

3.4 Only allows certain molecules to pass through✓ and prevents others. (1)

3.5 - It only allowed water to move through✓
- prevented sugar molecules✓
- causing water to move into the potato✓ (3)

[9]

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST CELL DIVISION MITOSIS

MARKING GUIDELINES

MARKS: 30

This marking guideline consists of 5 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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SECTION A

QUESTION 1

1.1	1.1.1	A✓✓	
	1.1.2	D✓✓	
			(4)
1.2	1.2.1	Cancer✓	
	1.2.2	Interphase✓	
	1.2.3	Centromere✓	
	1.2.4	Cytokinesis✓	
			(4)
1.3	1.3.1	A only✓✓	(2)
	1.3.2	B only✓✓	(2)
			(4)

TOTAL SECTION A 12

SECTION B

QUESTION 2

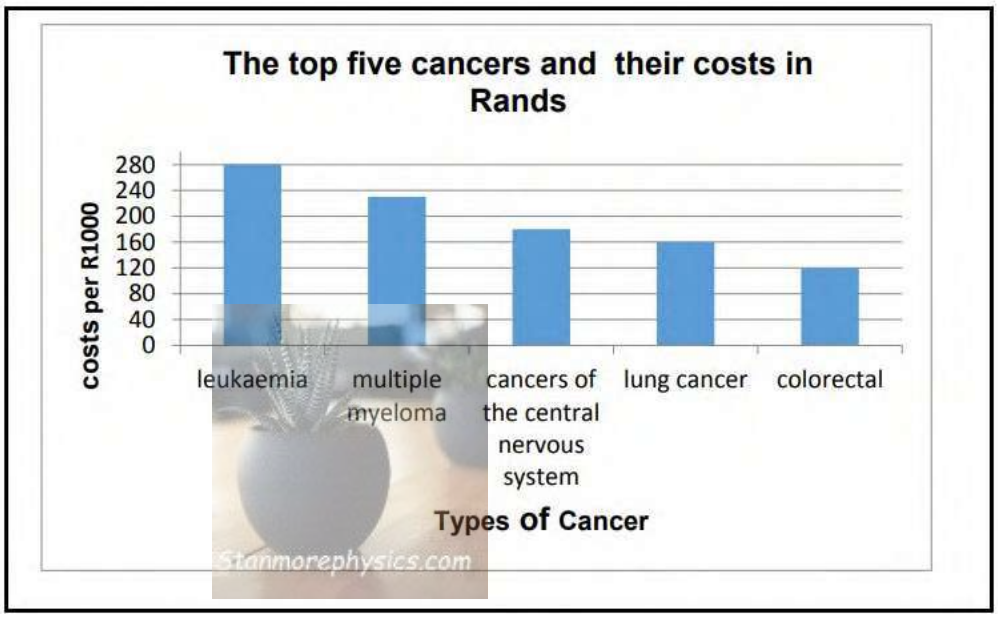
2.1	2.1.1	Metaphase ✓	(1)
	2.1.2	chromosomes line up at the equator ✓	(1)
	2.1.3	A – Spindle fibre ✓	(1)
		B – Chromosome ✓/ chromatid	(1)
		C – Centriole	(1)
	2.1.4	2 ✓chromosomes	(1)
	2.1.6	- Growth ✓ - Replace and repair worn out cell or tissue ✓ - Asexual reproduction ✓	(3)
			[9]

QUESTION 3

3.1 3.1.1 Lung cancer ✓ (1)

3.1.2 Radiotherapy, ✓ chemotherapy, ✓ surgery ✓ (3)

3.1.3



Bar graph rubric

Type of graph	**1**
Heading for graph	**1**
Correct label and scale of X-axis	**1**
Correct label and scale of Y-axis	**1**
Plotting of points	1–4 bars correctly plotted: **1** 5 bars correctly plotted: **2**
TOTAL	**6**

(6)

[9]

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
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GRADE 10

LIFE SCIENCES
INFORMAL ASSESSMENT: PLANT TISSUES AND PLANT ORGAN (LEAF)

MARKING GUIDELINE

Marks 30

N.B This marking guideline consist of 6 pages

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17. **Caption**
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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 B✓✓

(4x2) **(8)**

1.2 1.2.1 Meristematic tissue✓
1.2.2 Chlorenchyma✓
1.2.3 Epidermis✓
1.2.4 Scerenchyma✓

(4x1) **(4)**

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

(2x2) **(4)**

SECTION B
QUESTION 2

2.1 2.1.1 Parenchyma ✓ (1)

2.1.2 - Epidermal cells are transparent ✓
- to allow sunlight to enter the leaf for photosynthesis✓

- Epidermal cells are closely packed ✓
- to protect underlying cells✓

- Epidermal cells in stems and leaves covered by cuticle✓
- to reduce water loss✓

- Presence of guard cells with stomata✓
- allow for gaseous exchange✓

- Guard cells have chloroplasts✓
- to allow for photosynthesis✓
(**Mark first TWO only)**

(2)

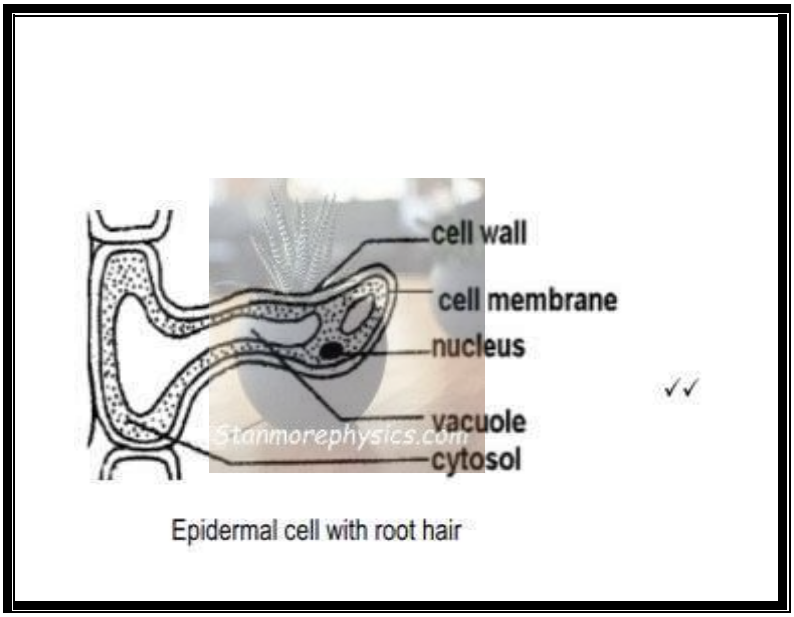
2.1.3 -Tissue C has closely packed cells✓/cells with no intercellular spaces
-so, it will not allow for movement of water ✓/gasses

-The cells have thickened wall✓
-that will not allow water to pass through✓

(2)

Any 1x2

2.2



✓✓

Criteria	Mark allocation
Caption	1
Root hairs drawn	1
Any two correct labels	2

(4)

[9]

QUESTION 3

3.1.1 A✓ Cuticle✓ **(2)**

3.1.2 Palisade parenchyma cells contains chlorophyll✓
To make food✓ **(2)**

3.2

Xylem vessels	**Phloem sieve tubes**
Conducts water and dissolved mineral salts✓	Conducts dissolved food✓
Walls are thickened ✓/lignified	Walls are thin✓ /made up of cellulose
Cross walls perforated ✓/absent	Sieve plates present✓
Transport is from root to leaves✓	Transport is from leaves to root✓
	1 for table +Any first 2x2

(5)

[9]

KWAZULU-NATAL PROVINCE
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NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFOEMAL ASSESSMENT -TOPIC TEST

MARKING GUIDELINES

SUPPORT & TRANSPORT IN PLANTS

MARKS: 30

This marking guideline consists of 4 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	B ✓✓		
	1.1.2	D ✓✓	(2 x 2)	**(4)**
1.2	1.2.1	Phloem✓		
	1.2.2	Casparian Strip✓		
	1.2.3	Transpiration ✓		
	1.2.4	Translocation ✓	(1 x 4)	**(4)**
1.3	1.3.1	Both ✓✓		(2)
	1.3.2	Both ✓✓		(2)
				(4)

TOTAL SECTION A: (12)

SECTION B

QUESTION 2

2.1	2.1.1	Parenchyma cells →endodermis →pericycle →xylem ✓✓ **(credit for CORRECT order only)**	(2)
	2.1.2	- water potential in the soil is higher✓ than that of the cell sap in the vacuole✓ - water diffuses✓ from soil along a water potential gradient - by osmosis✓ through permeable cell wall and differentially permeable cell membrane ✓/plasmalemma/ cytoplasm/ tonoplast - into the vacuole of root hair✓ - absorption of water is a passive process✓ - and the water potential of cell sap increases✓ **Any 4**	(4)
	2.1.3	-The cells are elongated cells, ✓/ where the cross walls disappear to form continuous tubes for the transport of water✓ −Xylem tissue does not contain cytoplasm✓/ contains no living tissue so that the path of water is not blocked✓by the cytoplasm − The cellulose cell walls are strengthened with lignin, ✓to prevent them from collapsing✓under the strong suction pressure **(Mark first ONE only 1 x 2)**	(2)
	2.1.4	Root pressure✓	(1)
			[9]

QUESTION 3

3.1	3.1.1	Rate of transpiration✓ in leaves	(1)
	3.1.2	It increased the rate of transpiration✓	(1)
	3.1.3	There might be other limiting factors✓that became short in supply that lead to no further increase in transpiration rate ✓	(2)
	3.1.4	leafy shoots of the same plant were used✓ leafy shoots were of the same age✓ **(Mark the first ONE only)**	(1)
	3.1.5	Acts as a control✓so that results can be compared✓	(2)
	3.1.6	The rate of transpiration increases with an increase in light intensity ✓✓up to a point where it no longer increases	(2) **[9]**

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT –ANIMAL TISSUES

MARKING GUIDELINES

MARKS: 30

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MARKING GUIDELINES

SECTION A

QUESTION 1

1.1	1.1.1	D✓✓		
	1.1.2	C✓✓	(2 x 2)	**(4)**
1.2	1.2.1	Squamous ✓ /Endothelial		
	1.2.2	Columnar epithelium✓		
	1.2.3	Cardiac✓		
	1.2.4	Areolar ✓	(1 X 4)	**(4)**
1.3	1.3.1	B only✓✓		(2)
	1.3.2	Both A and B ✓✓		(2)
				(4)

SECTION B

QUESTION 2

2.1

	2.1.1	Ciliated columnar epithelium✓	(1)
	2.1.2	(a) B✓ Nucleus✓	(2)
		(b) A✓ Cilia✓	(2)
	2.1.3	Has goblet cells✓that produces mucus to trap the germs✓/moisten the surface Has cilia✓ to remove dust particles✓	
		(2x2)	(4)
			[9]

QUESTION 3

3.1	3.1.1	(a) Squamous epithelium ✓	(1)
		(b) White fibrous tissue✓/fibrous cartilage	(1)
	3.1.2	-Protects underlying tissue✓ -Allow gases like CO2 and O2 to pass through the alveoli of the lungs✓ -Allows substances in solution to pass through the blood capillary wall✓ (**Mark the first TWO only)**	(2)
	3.1.3	-Fibrous connective tissue/diagram B contains dense network of collagen fibres✓ that make it extremely strong✓	(2)
	3.1.4	- Tendons✓ - ligaments✓ **(Mark first ONE only)**	(1)
			(7)

3.2 - White fibrous tissue is firm /not flexible✓
- Yellow elastic tissue is flexible✓
- allowing the ligaments to stretch when the bones move✓

(Any 2) (2)
[9]

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFOEMAL ASSESSMENT -TOPIC TEST SUPPORT IN ANIMALS

MARKING GUIDELINES

MARKS: 30

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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 ✓ ✓		
	1.1.2	D ✓ ✓		
			(2×2)	**(4)**
1.2	1.2.1	Vertebral Column ✓		
	1.2.2	Synovial fluid ✓		
	1.2.3	Cranium ✓		
	1.2.4	Atlas ✓	(4×1)	**(4)**
1.3	1.3.1	A only ✓✓		
	1.3.2	None ✓✓		
			(2×2)	**(4)**
			TOTAL SECTION A:	**(12)**

SECTION B
QUESTION 2

2.1	(a)	Patella ✓	(1)
	(b)	Tibia	(1)
	(c)	Femur	(1)
2.2		Hinge ✓	(1)
2.3		Reduces friction at the joints ✓	(1)
2.4		- Movement in one direction ✓ /allows for flexion and extension - with some rotation ✓	(2)
2.5		- Collagen fibres ✓ - provide strength ✓ - Elastic fibres ✓ - allows the ligaments to stretch ✓ **(Mark first ONE only)**	(2)
			[9]

QUESTION 3

3.1 3.1.1 (a) Age ✓
Gender ✓ (2)

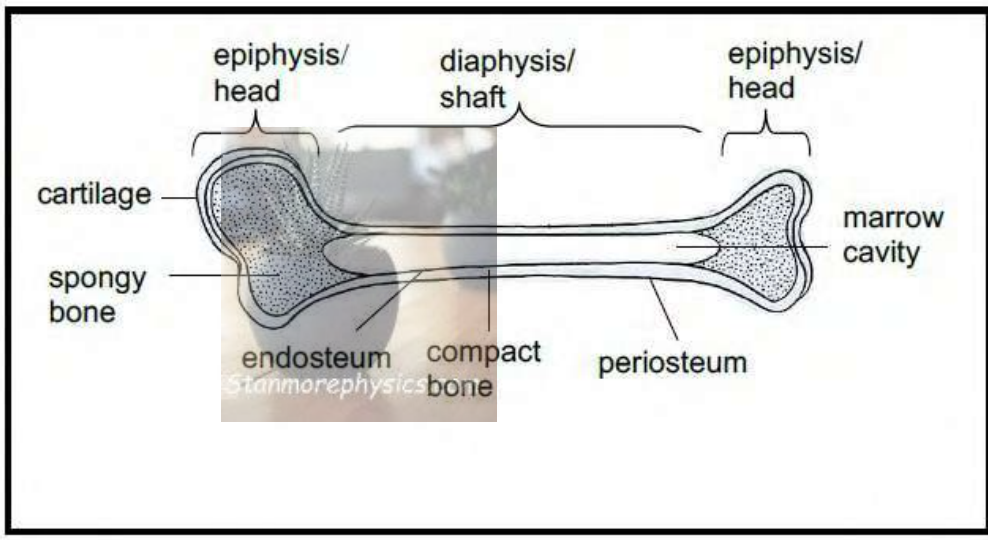
(b) Incidence of osteoporosis ✓ (1)

3.1.2 Increase sample size ✓
Take random samples ✓ (2)

(5)

3.2

The structure of the long bone



Criteria for marking the diagram

Criteria	Mark allocation
Caption	1
Correct diagram	1
Any TWO labels	2

(4)

[9]

TOTAL SECTION B: 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

TOPIC TEST: TRANSPORT SYSTEM IN ANIMALS

MARKING GUIDELINES

MARKS: 30

This marking guideline consists of 4 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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    Do not accept.
12. **Spelling errors**
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17. **Caption**
    All illustrations (diagrams, graphs, tables, etc.) must have a caption.

Question 1

1.1

1.1.1 C✓✓
1.1.2. C✓✓ (2X2) **(4)**

1.2

1.2.1 Left ventricle✓
1.2.2 Endothelium✓
1.2.3 Aorta ✓
1.2.4 Capillaries✓ (1 X 4) **(4)**

1.3

1.3.1 B only ✓✓
1.3.2 A only ✓✓ (2X2) **(4)**

TOTAL SECTION A: 12

QUESTION 2

2.1

2.1.1 (a) D -Tricuspid valve✓ (1)
(b) E - Right ventricle✓ (1)

2.1.2 Prevent the mixing of oxygenated blood and deoxygenated blood✓ (1)

2.1.3 Valve A and F close✓ to prevent the backflow of the blood✓ (1)

2.1.4 -oxygenated blood will not enters the heart✓
-less oxygen in the cardiac muscles ✓
-less functioning of the heart
-leading to death✓

*(*Any ONE*)* (2)

2.1.5

Artery	**Vein**
Pulmonary artery carry deoxygenated blood away from the heart✓	Pulmonary vein carry oxygenated blood the heart✓
Most arteries carry oxygenated blood✓	Most veins carry deoxygenated blood✓

(1 mark for table + Any *2X2)* (5)
[11]

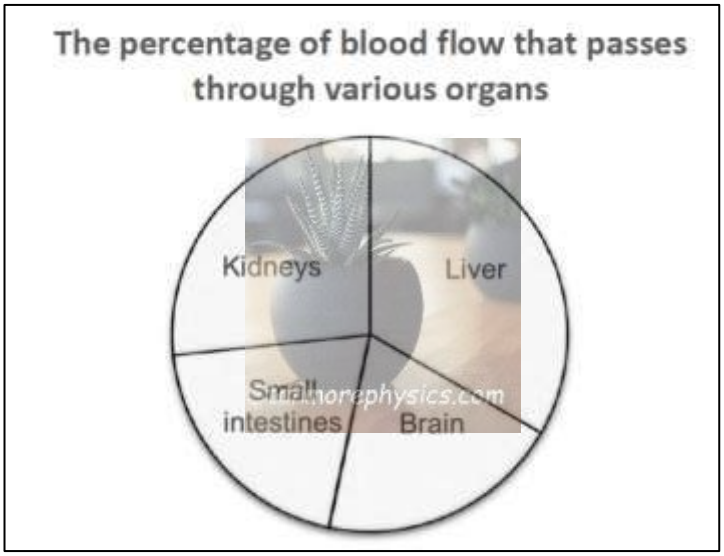
QUESTION 3

3.1

3.1.1 100-75 =25✓ (1)

3.1.2 **25+15+15+20) = 75**

Body Organs	**Convessions**
Livers	25/75 x360° = 120°
Kidneys	20/75 x 360° = 96°
Small intestines	15/75 x 360° = 72°
Brain	15/75 x 360° = 72°



Features	**Mark allocation**
Caption (C)	1
Correct type of graph (T)	1
Calculations: 1-3 correct calculations	1
All 4 correct calculations	1
Correct proportion (P): 1-3 correct proportion of slices	1
All 4 correct proportion of slices	2

(6)
[7]

TOTAL MARKS FOR SECTION B: 18

GRAND TOTAL : 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST

MARKING GUIDELINES

History of Life on Earth

MARKS: 30

This marking guideline consists of 4 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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20. **Caption**
    All illustrations (diagrams, graphs, tables, etc.) must have a caption.

SECTION A

QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	D ✓✓		
			(2x 2)	**(4)**
1.2	1.2.1	Extinction✓		
	1.2.2	Biogeography✓		
	1.2.3	Radiometric dating✓		**(3)**
1.3	1.3.1	Both A and B✓✓		(2)
	1.3.2	B only✓✓		(2)
				(4)

TOTAL SECTION A: 11

SECTION B

QUESTION 2

2.1	2.1.1	Pangaea✓		(1)
	2.1.2	Continental drift✓		(1)
	2.1.3	Laurasia ✓and Gondwanaland ✓ **(Mark first TWO only)**		(2)
	2.1.4	(a)	X- Paleozoic✓	(1)
		(b)	Y- Mesozoic✓	(1)
		(c)	Z- Cenozoic✓	(1)
	2.1.5	(a)	4✓	(1)
		(b)	2✓	(1)
		(b)	The ice ages reduced the number of species on earth/✓ reduced the biodiversity on earth **(Mark first TWO only)**	(1)
				10

-

2.2

- Conditions for formation of fossils were not conducive ✓
- Soft bodied organisms/invertebrates do not fossilise easily ✓
- Not all fossils have yet been found ✓

- Mistakes in the dating process
- Some fossils wrongly classified ✓
- No transitional/intermediate fossils✓ if changes were rapid

(Any 2 x 1) (2)

(Mark first TWO only)

[12]

QUESTION 3

3.1 3.1.1 Mass extinctions ✓ (1)
Event 3 ✓

3.1.2 A volcanic eruption released particles into the air ✓which blocked out the sun ✓ (1)

3.1.3 For long periods of time ✓Lowering temperatures on Earth✓ causing many organisms to go extinct as they could not adapt ✓
(Any 3) (3)

3.1.4 Asteroid impact✓ (2)
Continental drift✓

[7]

TOTAL SECTION B: 19

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST : BIOSPHERE AND ECOSYSTEM

MARKING GUIDELINES

MARKS: 30

This marking guideline consists of 04 pages.

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Question 1

1.1

1.1.1 C ✓✓

1.1.2. A ✓✓

(2X2) **(4)**

1.2

1.2.1 Biome ✓

1.2.2 Hydrosphere ✓

1.2.3 Lithospehere ✓

1.2.4 Ecology ✓

(1X4) **(4)**

1.3

1.3.1 Both A and B ✓✓

1.3.2 B only ✓✓

(2X2) **(4)**

TOTAL SECTION A 12

QUESTION 2

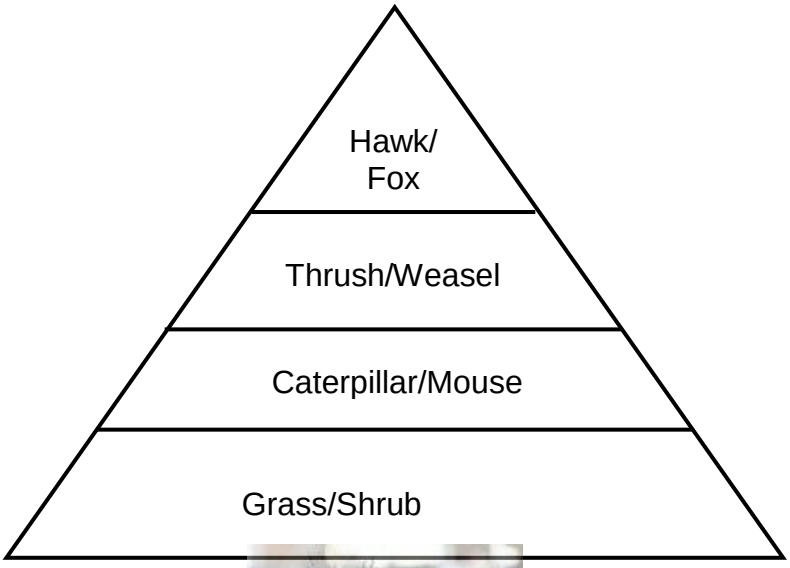
2.1

2.1.1 The number of mice would not decrease✓ as quickly because only one predator was removed✓

OR

The number of rabbits and squirrels will decrease✓ faster since the fox must look for another source of food✓ (2)

2.1.2



Food Pyramid of Energy

Content	Mark allocation
Heading (H)	1
Correct organisms filled in at each level according to given food chain	4
Tropic levels (T)	1
Pyramid shape drawn (P)	1

(7)
[9]

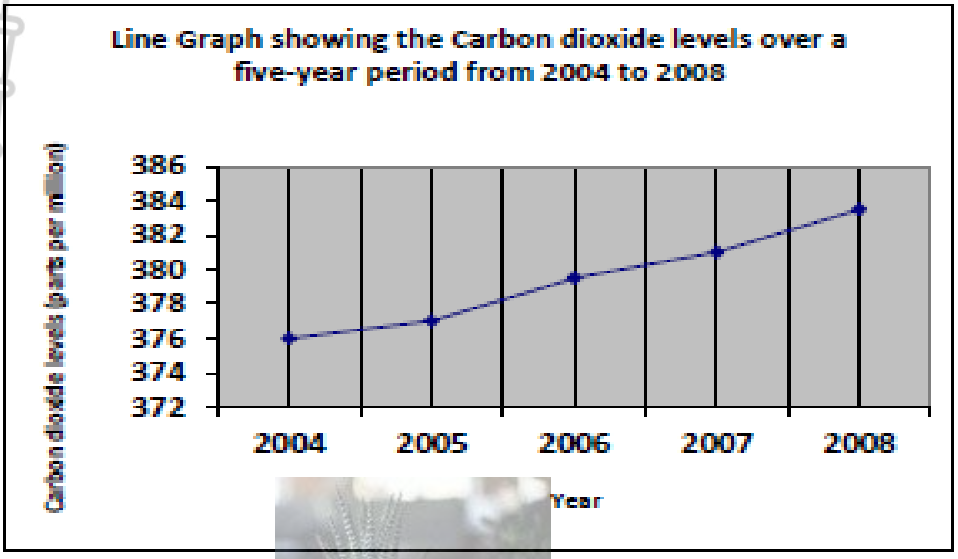
QUESTION 3

3.1

3.1.1 Carbon dioxide level✓ (1)

3.1.2 383.5 – 376.0✓ = 7,5 parts per million *✓ (*** compulsory**) (2)

3.1.3



Features	Mark allocation
Caption (C)	1
Correct type of graph (T)	1
Y- axis label and scale	1
X-axis label and scale	2
Plotting (1-4 points correct)	1
(All 5 points correct)	2

(6)
[9]

TOTAL SECTION :B 18

GRAND TOTAL: 30

KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

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GRADE 10

LIFE SCIENCES

INFORMAL ASSESSMENT -TOPIC TEST

BIODIVERSITY AND CLASSIFICATION

MARKING GUIDELINES

MARKS: 30

This marking guideline consists of 4 pages.

Please turn over

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	A✓✓	(2 x 2)	**(4)**
1.2	1.2.1	Monera✓		
	1.2.2	Prokaryotic✓		
	1.2.3	Saprotrophic✓		
	1.2.4	Vertebrates ✓	(1 x 4)	**(4)**
1.3	1.3.1	B only✓✓		(2)
	1.3.2	A only✓✓		(2)
			(2 x 2)	**(4)**

TOTAL SECTION A: 12

SECTION B

QUESTION 2

2.1	2.1.1.	(a) P - Protista✓		(1)
		(b) Q - Chitin✓		(1)
		(c) R - Cellulose✓		(1)
		(d) S - Autotrophic✓		(1)
	2.1.2.	A cell/organism with a membrane-bound nucleus/organelles✓		(1)
	2.1.3.	– External digestion✓ – Internal digestion✓		(2)
	2.1.4.	Chloroplast✓		(1)

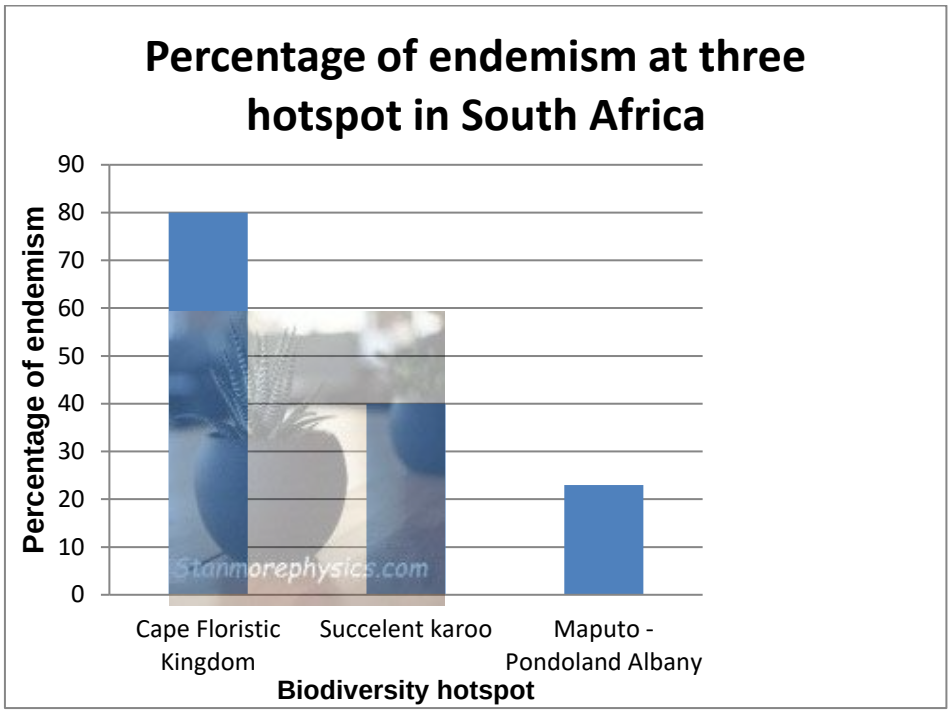
[8]

QUESTION 3

3.1. 3.1.1 Organism that are found in one area and nowhere else✓ (1)

3.1.2 80 - 23✓=57✓ (2)

3.1.3



Correct type of graph **(T)**	1
Caption **(C)**	1
Correct labels for X-axis and the Y-axis including correct units **(L)**	1
Correct scale for the X-axis (correct width and bar spacing) and Y-axis **(S)**	1
Plotting of bars **(P)**	1: 1-2 bars plotted correctly 2: All 3 bars correctly plotted

(6)

[10]

TOTAL SECTION B: 18

GRAND TOTAL: 30

Part B Solutions

ANSWERS TO REVISION QUESTIONS

4.1.1 (a) Grass✓ (1)
(b) Springbok✓/Zebra (1)

4.1.2 There would be fewer predators✓
This will lead to an increase in springbok and zebra✓
This would lead to an increase in the lion population✓ (3)

4.2.1 Mammalia✓ (1)

4.2.2 Panthera leo
Name✓
Underlined✓ (2)

4.3.1 An area with a distinct climate✓ together with the plants and animals that live there✓ (2)

4.3.2 Fynbos✓ (1)

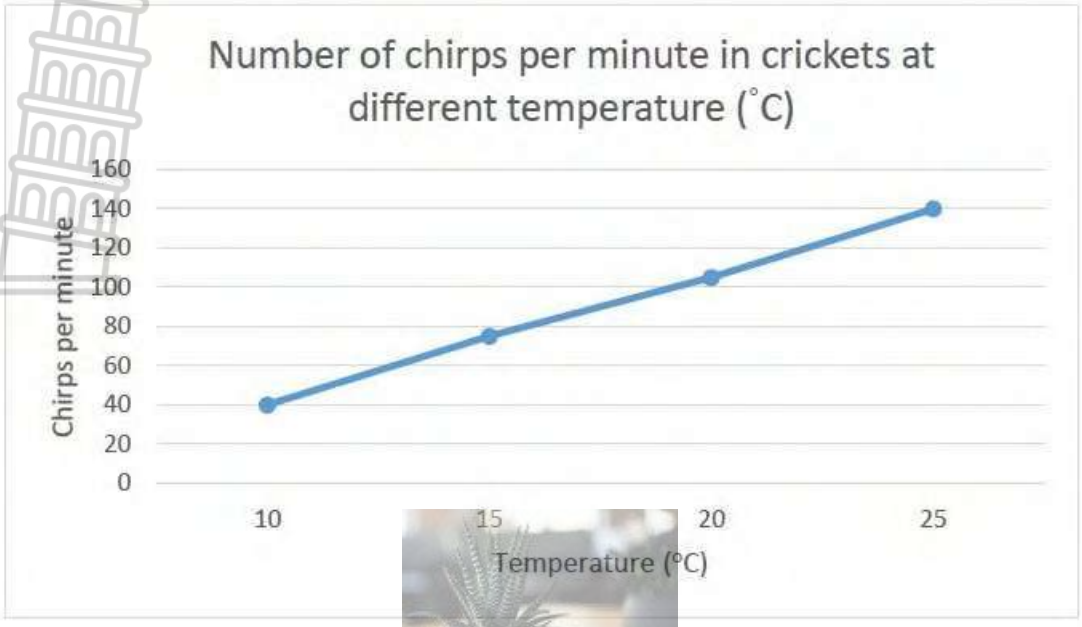
4.3.3 Urban expansion✓
Clearing agricultural land✓
Harvesting natural resources for industrial use✓ **Mark first THREE only** (3)

4.3.4 9 000 ✓ X 70/100 ✓ = 6 300 ✓species (3)

4.4.1 To determine if temperature ✓ affects the number of chirps per minute in crickets ✓ (2)

4.4.2 Size of the boxes ✓ Environmental conditions ✓
Amount of food / water ✓
The person recording the chirps ✓ / method of recording the number of chirps
(Mark first TWO only) (Any 2 x 1) (2)

4.4.3



Guidelines for the assessing of the graph

CRITERIA	ELABORATION	MARK
Correct type of graph	Line graph drawn	1
Caption of the graph	Both variables included	1
Axes labels	Correct labels on X-and Y-axes and unit on X-axis	1
Scale for X-and Yaxes	Equal spacing between intervals for each axis	1
Plotting of points	1-3 points plotted correctly All 4 points plotted correctly	1 2

4.4.4 - Repeat the investigation✓
- Use a larger sample size ✓ (2)

4.4.5 Summer ✓
The temperatures are higher ✓/ crickets chirp more at high temperatures. (2)

4.5.1 A = Crustacea: ✓ five pairs legs, no wings, two body regions, two pairs antennae✓

B = Chilopoda: ✓ > ten pairs legs, one per segment, no wings, long wormlike body, one pair long antennae✓

C = Insecta: ✓ three pairs legs, wings, three body regions, one pair short antennae✓

D = Diplopoda: ✓ > ten pair legs, two pair per segment, no wings, long cylindrical body, short antennae✓

E = Arachnida: ✓ four pair legs, no wings, two body regions, no antennae✓

(5 x 2) **(10)**

4.6.1 A – nitrates ✓
B – Ammonia ✓
C – Nitrites ✓ (3)

4.6.2 Denitrification ✓ (1)
4.6.3 Legumes ✓ (1)
4.6.4 Lightning ✓ (1)

4.7.1 (Accept any value from) 55–60 million years ago✓/mya (1)
4.7.2 Permian✓ extinction (1)
4.7.3 400✓ – 200✓ = 200✓ families of species (3)
4.7.4 The extinction of a large number of families resulted in the availability of empty niches ✓ that could be filled by surviving✓species. These species are able to survive✓ best in these new niches and form new species✓ (4)

4.8.1 The organism dies and covered rapidly✓ 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✓ (Any 4) (4)

4.8.2 Frozen in ice✓ Trapped in tar✓
Trapped in amber✓ (Any 2) (2)

4.8.3 Radiometric dating✓ (1)

4.9.1 (a) Ordovician✓ (1)
(b) Trilobites✓ (1)
4.9.2 Geological time scale ✓ (1)
4.9.3 Cambrian✓ (1)

4.10.1 Biogeography ✓ (1)
4.10.2 Gondwanaland ✓ (1)
4.10.3 The fossils of Mesosaurus / Glossopteris / Cynognathus✓
Are found on both South America and Africa ✓ (2)
4.10.4 Glossopteris✓ (1)