Hoërskool Dr. Johan Jurgens

Grade 10 Life Sciences

School Based Assessment

2025 Term 3

Examiner: Mr K. Da Gama

Moderator: Mrs S. Stoltz

Duration: 60 minutes Total Marks: 70

Name: _____

Grade: 10 key __

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 SHEET PROVIDED.
3. START EACH SECTION ON A NEW PAGE.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue 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. You may use a non-programmable calculator, protractor and a compass where necessary.
10. Round off all calculations to two decimals after the comma.
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–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK, for example 1.1.11 D.

1.1.1. The process whereby one cell gives rise to two cells with the identical genetic make-up as the original cell. (2)

a. Meiosis
b. Mitosis
c. DNA replication
d. Cell division

1.1.2. Which one of the following cells is mostly responsible for photosynthesis? (2)

a. Epidermis cells
b. Xylem
c. Palisade cells
d. Cuticle

1.1.3. The red pigment in the blood that carries oxygen is … (2)

a. found in the leucocytes
b. found in the platelets
c. is not found in erythrocytes
d. is known as haemoglobin

1.1.4. Plant tissue made of specialised cells that are differentiated to perform particular functions are known as: (2)

a. permanent
b. meristematic
c. cambium
d. primary

1.1.5. The tissue responsible for the transportation of water is … (2)

a. sponge tissue
b. vessels and tracheids
c. phloem
d. xylem

(5x2=10)

1.2. Give the correct biological term for each of the following descriptions. Write only the term next to the relevant question number. For example, 1.2.9. Cell.

1.2.1. The light trapping pigment found in the leaves. (1)
1.2.2. Movement of gas molecules from a region of high concentration to a region of lower concentration until equilibrium is reached. (1)
1.2.3. A type of transport that requires energy (1)
1.2.4. A bean shaped specialised epidermal cells responsible for regulating the size of the stoma opening. (1)
1.2.5. A process that involves loss of water vapour through the surface of the leaf (1)

(5x1=5)

1.3. Indicate whether each of the statements in COLUMN I applies to A only, B only, A and B or none of the items in COLUMN II. Write A only, B only, A and B or None next to the relevant question number (1.3.1 – 1.3.5).

COLUMN I	COLUMN II
1.3.1. Found only in plant cells.	A. Cell wall B. Ribosomes
1.3.2. Tissue that forms the ligaments.	A. Yellow elastic. B. White fibrous
1.3.3. Prevents water loss.	A. Cuticle B. Root hairs
1.3.4. Needed for blood clotting.	A. Platelets B. Vitamin K
1.3.5. Liquid matrix.	A. Cartilage B. Plasma

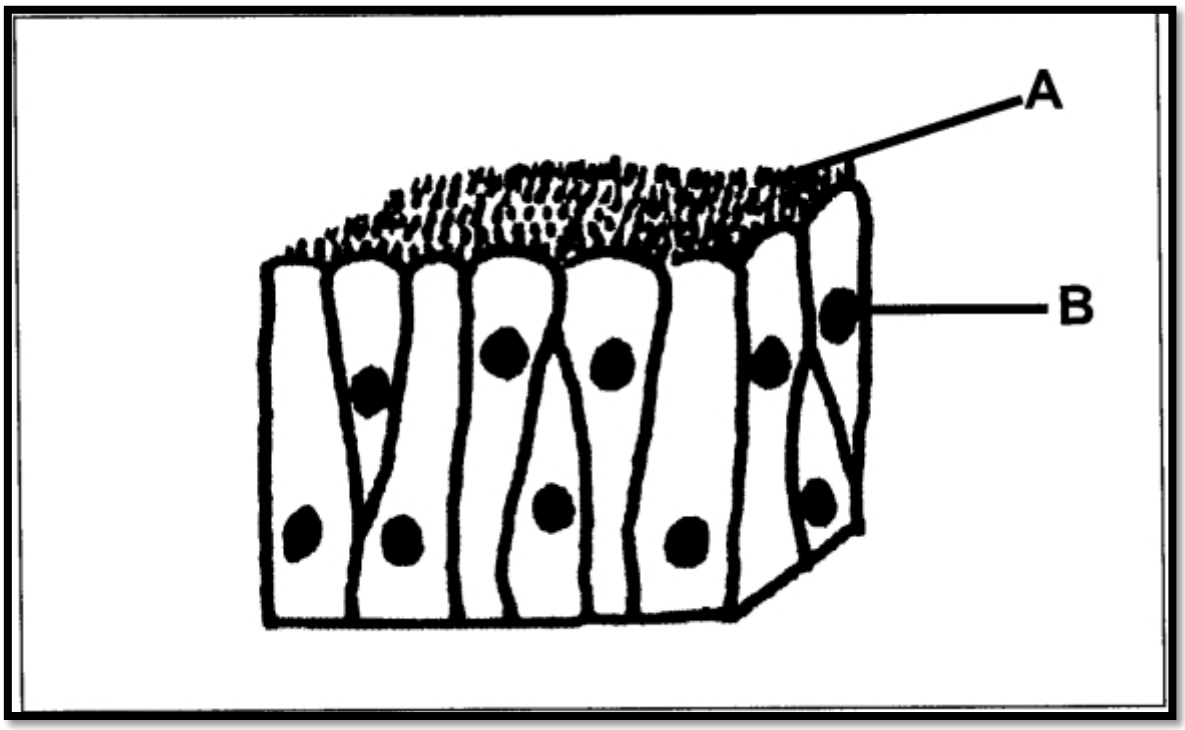
(5x2=10)

[25]

Section B

Question 2

2.1. Use the diagram below that shows animal tissue to answer the questions 2.1.1. – 2.1.4.



2.1.1. Identify the tissue above. (1)

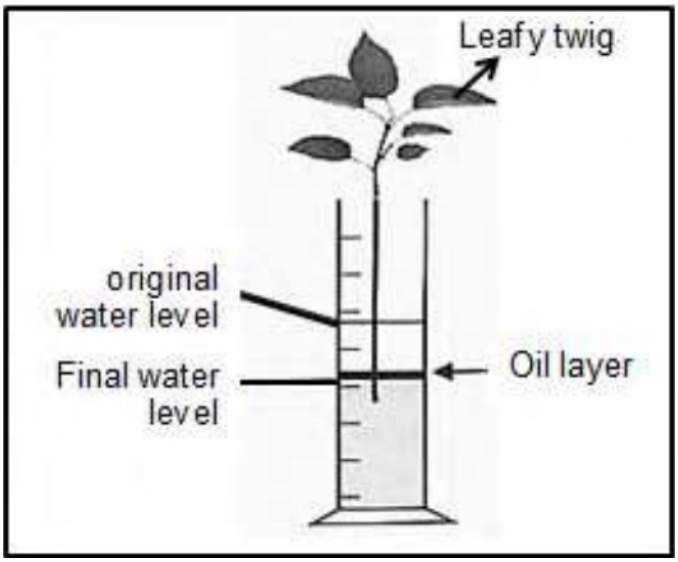
2.1.2. Identify part B (1)

2.1.3. Give only the LETTER of the part that traps the dust in the above tissue. (1)

2.1.4. Explain TWO ways in which the tissue mentioned in QUESTION 2.1.1 is structurally adapted to perform its function. (2)

2.2 Explain THREE adaptations of Xylem tissue for its function. (6)

2.3. Four measuring cylinders, A, B, C and D were set up as the one shown in the diagram below.



Each measuring cylinder contained a leafy twig and 80 ml water covered with a layer of oil.

The four cylinders were left in the laboratory but were treated differently as follows:

- Cylinder A : placed in wind
- Cylinder B : placed in sunlight
- Cylinder C : the leafy twig was covered in a clear plastic bag that was wet on the inside
- Cylinder D : placed in shade

After two hours, water levels in the four cylinders, A to D were recorded and the following results were obtained:

Results:

A	B	C	D
40 ml	48 ml	50 ml	55 ml

2.3.1 Name the process that causes water to be lost from the twig. (1)

2.3.2. State the aim of this investigation. (2)

2.3.3. Explain the purpose of the oil layer? (2)

2.3.4. Explain ONE precaution that needs to be taken when using leafy twigs, to ensure the results are valid. (2)

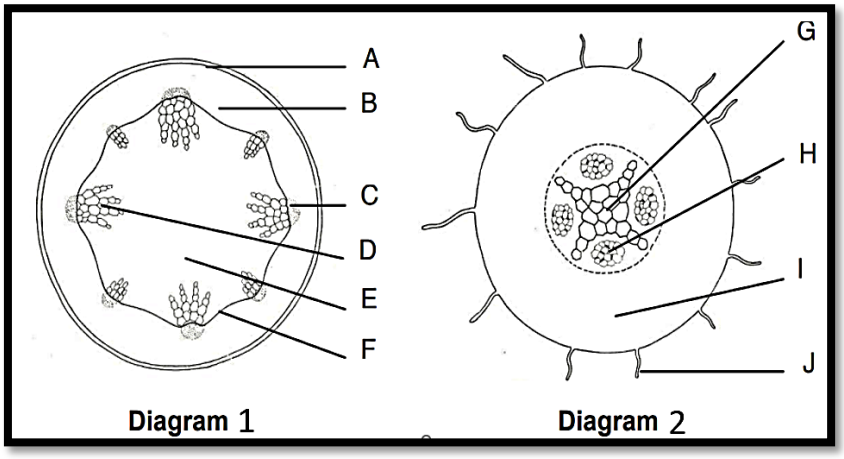
2.3.5. If all the conditions were kept constant. Calculate how many hours it would take for Cylinder A to reach 0 ml? (4)

2.3.7. Explain how you would increase the water loss of Cylinder B. (3)

[25]

Question 3

3.1. 3.1. Study the diagrams below that represent a transverse section through a root and a stem and answer the questions that follow.



3.1.1. Which diagram represents the stem? Give a reason for your choice. (2)

3.1.2. Identify each of the following labels:

a. A
b. B
c. I
d. J (4)

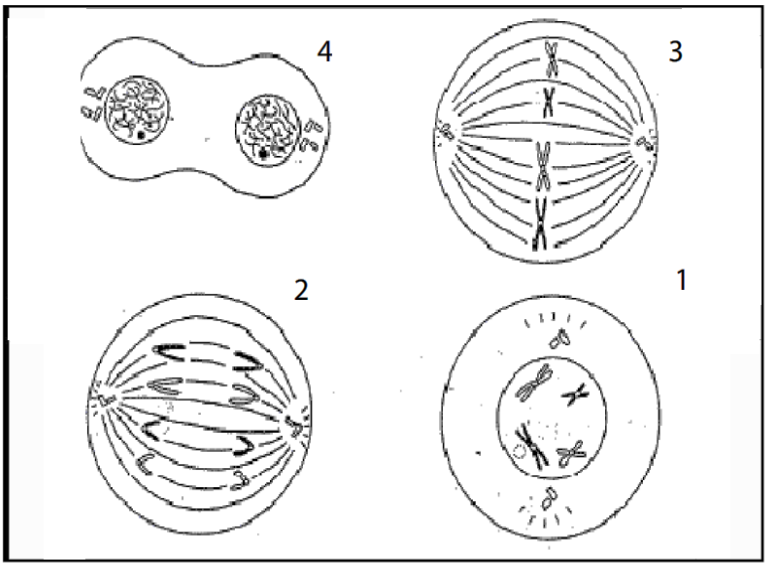
3.1.3. State the function of each of the following labels:

a. C
b. H (2)

3.1.4. Which label contains meristematic tissue? (1)

3.1.5. State one structural difference between parenchyma and collenchyma. (1)

3.2. Study the diagrams below that show the phases of a certain process that occurs in body cells.



3.2.1. Identify:

a. the process above. (1)
b. the phases 1 and 3. (3)

3.2.2. By making use of NUMBERS ONLY, arrange the phases in the correct sequence. (4)

3.2.3. If diagram 4 was a plant cell, how would the cells be divided at the centre? (1)

3.2.4. List TWO events that occur during phase 1. (2)

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[Total mark: 70]