MASIBAMBISANE HIGH SCHOOL

GRADE 10

LIFE SCIENCES

MAY 2023

ASSIGNMENT TASK 2

EXAMINER: MS KAMBI MODERATOR: MRS MGUBANTO

MARKS: 50

TIME: 1 HOUR

GRADE 10

SURNAME……

NAME……

GRADE 10……

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions:

1. This is a formal SBA task and needs to be done under supervised conditions in the classroom.
2. Each learner completes this task on his/her own (under test conditions).
3. Present your answers per the instructions of each question.
4. Draw all diagrams in pencil and labels in blue/black ink.
5. The diagrams in this task may NOT be drawn to scale.

QUESTION 1

A group of Grade 10 learners looked at micrographs to observe cross sections of dicotyledonous roots and stems. One of the learners drew the following diagrams in her workbook.

DIAGRAM 1

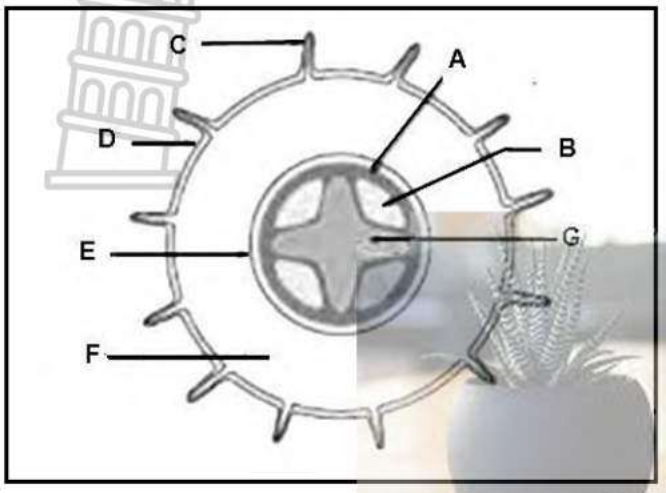
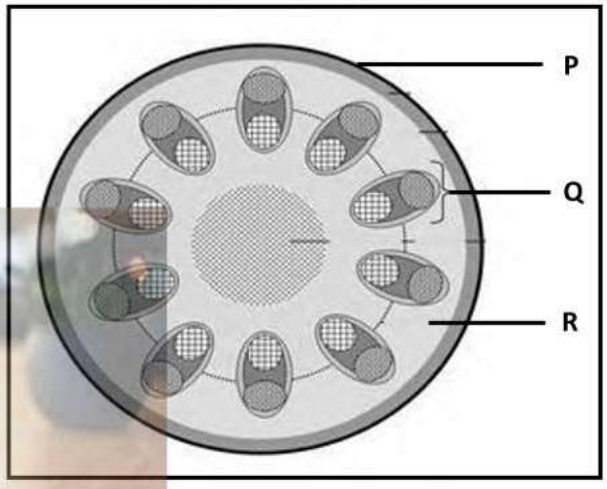


DIAGRAM 2



1.1 Which of the following diagrams **(1 or 2)** represents a dicotyledonous root? (1)

_____

1.2 Give TWO visible reasons for your answer in QUESTION 1.1. (2)

_____

_____

_____

1.3 Write down the LETTERS and NAMES of the parts that form the central cylinder in DIAGRAM 1. (6)

_____

_____

_____

1.4 Identify the parts labelled **P, Q and R** in DIAGRAM 2. (3)

_____

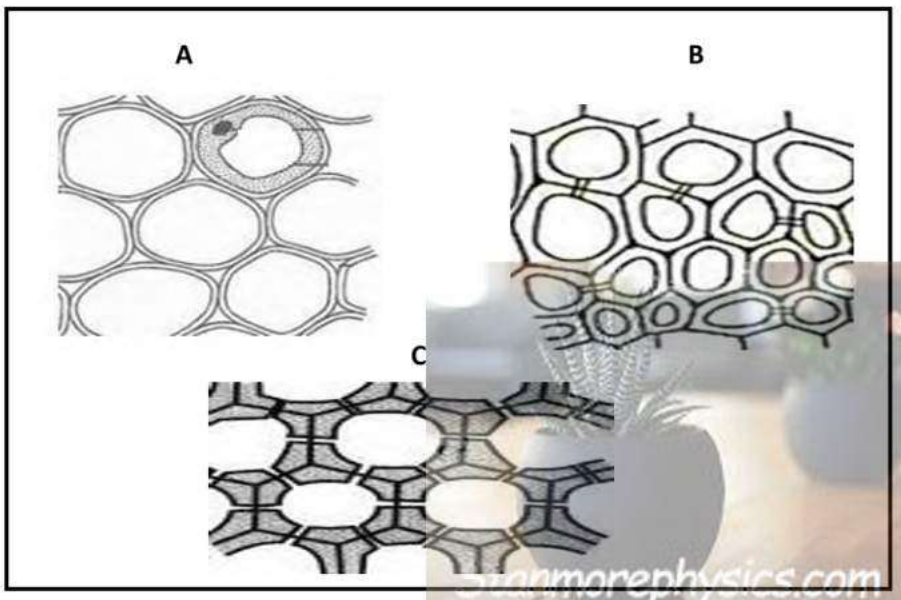
_____

_____

[12]

QUESTION 2

Study the following representations of plant tissues.



2.1 What is meant by the term tissue? (1)

_____

_____

2.2 Write down the LETTERS (**A, B or C**) of the tissue(s) that: (3)

(a) Serve as strengthening tissue_____

(b) Store food and water_____

2.3 Provide ONE structural characteristic of epidermal tissue. (1)

_____

2.4 Xylem is a conducting tissue found in stems, roots and leaves.
List THREE structural features of xylem that allows it to perform its function. (3)

_____

_____

_____

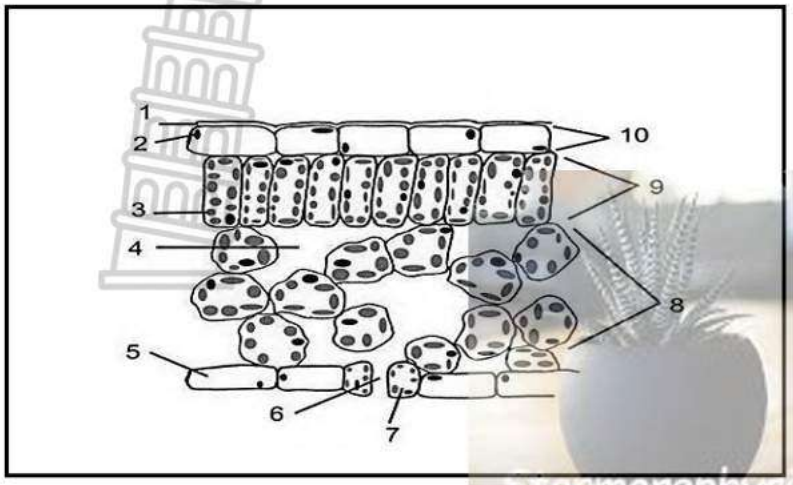
_____

_____

[8]

QUESTION 3

Study the diagram below of a cross section of a dicotyledonous leaf.



3.1 Give TWO main functions of the plant organ. (2)

_____

_____

_____

3.2 Provide labels for parts **1, 2 and 7.** (3)

1. _____

2. _____

7. _____

3.3 List ONE function of each of structures **1** and **3**. (2)

1. _____

3. _____

3.4 Structure **6** is involved in gaseous exchange.
Name THREE gases that are exchanged through the openings at **6**. (3)

_____ ; _____ ; _____

3.5 Calculate TWO structural differences between cells 8 and 9. (5)

[15]

QUESTION 4

The thickness of the annual rings in stems indicates the type of environmental condition that was occurring during the time of the tree's development. A thin ring usually indicates a rough period of development such as lack of water, forest fires or insect infestation. A thick ring means a prosperous period of development.

An investigation done in two forests (**A and B**) provided the following results:

Age of trees (years)	Average thickness of annual rings in Forest A (millimetres)	Average thickness of annual rings in Forest B (millimetres)
10	20	24
20	24	28
30	30	35
40	34	38
50	41	45
60	46	51

4.1 Identify the following in the investigation.

(a) Dependent variable. (1)

_____

(b) Independent variable. (1)

_____

4.2 What was the average thickness of the annual rings for 40-year-old trees in Forest **A**? (1)

_____

4.3 What was the average thickness of annual rings for all the trees found in Forest **B**?
Show ALL your calculations. (3)

_____

_____

_____

4.4 Based on the data, what can be concluded about the comparative health (condition) of trees from Forest **A** and Forest **B**? (1)

_____

_____

_____

_____

4.5 What is the relationship between the ages of trees and the average thickness of the annual rings? (1)

_____

_____

4.6 Draw line graphs on the same system of axes that show the information in the table. (7)

[15]

GRAND TOTAL:50

MASIBAMBANE HIGH SCHOOL
GRADE 10 - LIFE SCIENCES
ASSIGNMENT
TERM 2
2023
MARKS: 50
MEMORANDUM

QUESTION 1

1.1 Diagram 1✓ (1)

1.2 - Xylem is arranged in the form a cross✓
- Phloem occurs between arms of the cross✓
- Clearly defined endodermis is visible✓
- Root hairs are present✓ **(ANY TWO)** (2)

1.3 A✓- Pericycle✓
B✓- Phloem✓
G✓ - Xylem✓ (6)

1.4 P- Epidermis✓
Q- Vascular bundle✓
R- Parenchyma✓ (3)

[12]

QUESTION 2

2.1 A group of similar cells which perform a common function✓ (1)

2.2 (a) B✓and C✓
(b) A✓ (3)

2.3 Transparent✓/ no plastids✓/ brick shaped✓ **(ANY ONE)** (1)

2.4 - Cells are cylindrical✓
- Thick walls impregnated with lignin✓
- Large lumen✓
- Long tubes with openings✓
- No cell contents (dead cells)✓
- Cross walls are perforated/absent✓ **(ANY THREE)** (3)

[8]

QUESTION 3

3.1 -Traps sunlight for photosynthesis✓

- Allows gaseous exchange✓ for

- photosynthesis/ respiration and transpiration✓ **(ANY TWO)** (2)

3.2 1- Cuticle✓

2 – (Upper) epidermis✓

7- Guard cells✓ (3)

3.3 1- Reduce excessive moisture loss✓ (1)

3- Photosynthesis✓ (1)

3.4 Carbon dioxide✓, Oxygen✓, Water vapour✓ (3)

3.5

8 (Spongy mesophyll)	9 (Palisade mesophyll)
- Rounded	- Elongated
- Contain few number of chloroplasts	- Contain large number of chloroplasts
- Contain large intercellular spaces	- No intercellular spaces

Criteria	Mark
Table drawn	1
2x2 differences between the TWO parts (8&9)	4

(5)

[15]

QUESTION 4

4.1 (a) Average thickness of annual rings✓ (1)

(b) Age of tree✓ (1)

4.2 34mm✓ (unit must be given) (1)

4.3 24+28+35+38+45+51=221✓

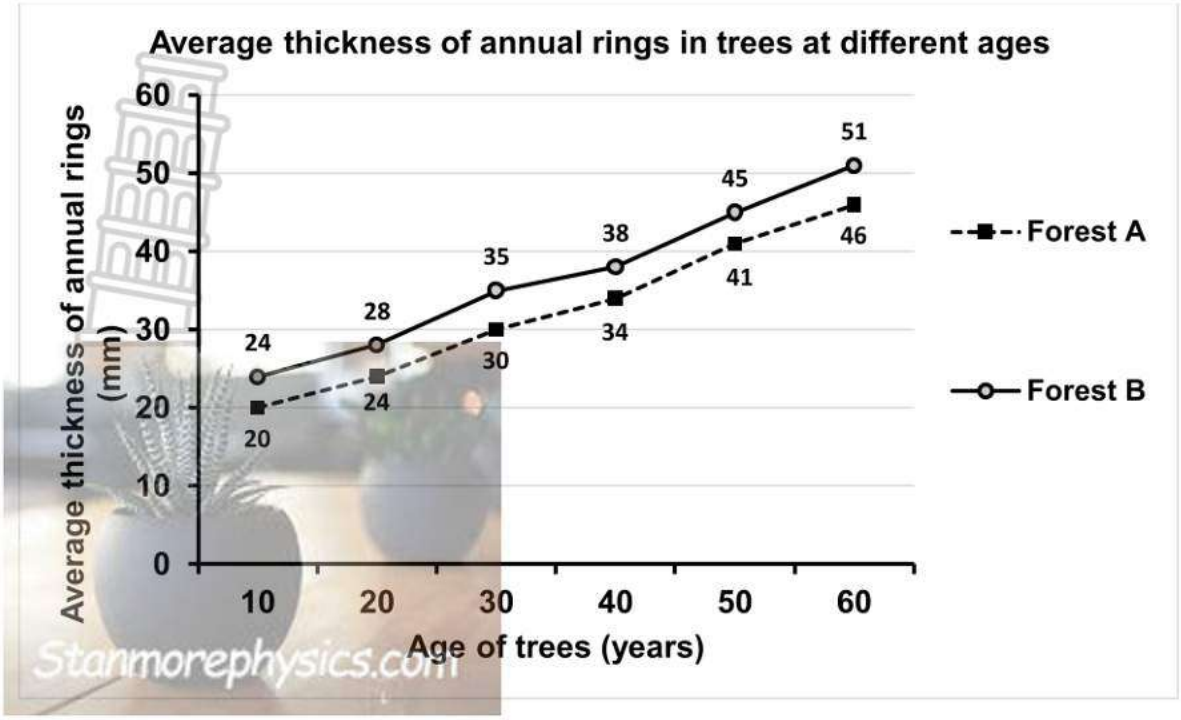
$$\frac{221}{6}\ \checkmark$$

= 36,8mm✓ OR 37mm✓ (3)

4.4 Forest **B** trees are healthier / in a better condition than those in Forest **A**✓ (1)

4.5 With increased age of trees, the thickness of the annual rings increase✓ (1)

4.6



Criteria and marks		
Caption (both variables)	**C**	1
Line graphs are drawn (type)	**T**	1
X and Y axes (label, unit, scale)	**A**	1
Two graphs drawn	**G**	1
Key or labels on graph	**K**	1
Plotting	**P**	1 – 10 readings correctly plotted: 1 All 12 readings correctly plotted: 2

(7)

(15)

GRAND TOTAL: 50