



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

**AGRICULTURAL SCIENCES
SEPTEMBER MARKING GUIDELINES**

12/09/2025

TOTAL MARKS : 100
DURATION : 2 hour

QUESTION 1**SECTION A**

1.1	1.1.1	C ✓✓		
	1.1.2	C ✓✓		
	1.1.3	D ✓✓		
	1.1.4	B ✓✓		
	1.1.5	A ✓✓	(5 x 2)	(10)
1.2	1.2.1	F ✓✓		
	1.2.2	G ✓✓		
	1.2.3	A ✓✓		
	1.2.4	B ✓✓		
	1.2.5	D ✓✓	(5 x 2)	(10)
1.3	1.3.1	Autotrophic organisms ✓✓		
	1.3.2	Hipertonic solution ✓✓		
	1.3.3	Symplastic movement ✓✓		
	1.3.4	Guttation ✓✓		
	1.3.5	Green manure ✓✓	(5 x 2)	(10)
1.4	1.4.1	Catabolic ✓		
	1.4.2	Active ✓		
	1.4.3	Lime ✓		
	1.4.4	Photolyses ✓		
	1.4.5	Necroses ✓	(5 x 1)	(5)
TOTAL SECTION A:				[35]

SECTION B**QUESTION 2 :**

2.1	2.1.1	<i>Photosynthesis</i> ✓		(1)
	2.1.2	A. Light phase (Hills reaction)✓ B. Dark phase (Calvin cycle)✓		(1) (1)
	2.1.3	<i>Chloroplast</i> ✓		(1)
	2.1.4	<i>Trellising</i> ✓ Pruning✓ Greenhouse✓ Plant density/space. ✓	Any 3	(3)

2.1.5 Stem✓
Roots✓
Leaves✓
Fruits ✓ Any 2 (2)

2.1.6 Respiration✓ (1)

2.1.7	<i>Photosynthesis</i> <u><i>This is an anabolic process.</i></u> <i>Energy from the sun is used to build energy-rich organic compounds such as carbohydrates from simple inorganic compounds. ✓</i> <i>Occurs during the day in sunlight. ✓</i> <i>Energy from the sun is used. ✓</i> <i>The rate of photosynthesis is about 30 times that of respiration. ✓</i> <i>The oxygen that is released is used by animals for respiration and the carbon dioxide that is released is used by plants for photosynthesis. ✓</i> <i>Water is absorbed from the soil✓</i>	<i>Respiration</i> <u><i>This is a catabolic process.</i></u> <i>Energy is released and energy-rich compounds, such as carbohydrates and fats, are broken down into simpler substances, e.g. carbon dioxide and water. ✓</i> <i>Occurs during the day and night. ✓</i> <i>Chemical potential energy is released. ✓</i> <i>The rate is much slower than that of photosynthesis. ✓</i> <u><i>Oxygen from the atmosphere is used</i></u> <i>to convert the carbohydrates back to carbon dioxide and water✓.</i> <i>Water is released into the atmosphere✓</i>
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Any 2 differences (4)

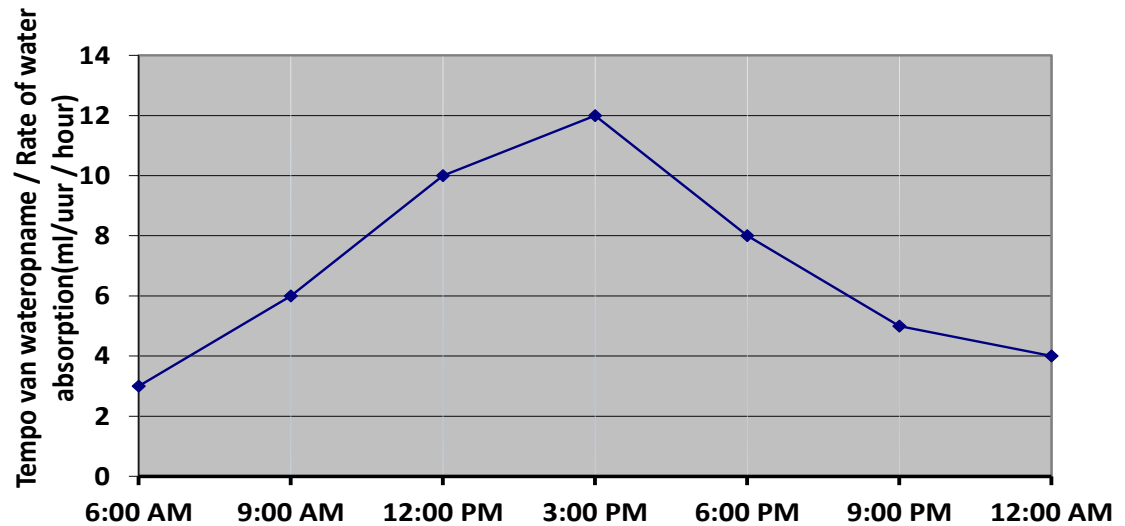
[14]

QUESTION 3 :

- 3.1 3.1.1 (i) Root hair region✓ - Site for water and mineral absorption. ✓ (2)
 (ii) Region of elongation✓ - Cells grows in length. ✓ (2)
 (iii) Root cap✓ – protects the root tip✓ (2)
 (iv) Region of cell division- new cells are formed behind the root tip✓ (2)
- 3.1.2 Capillary water ✓ (1)
- 3.1.3 **Osmosis** Is the movement of water molecule from high water potential to low water potential through permeable membrane ✓✓ (2)
- Diffusion** Is the movement of molecule from a region with a high concentration to a region with a low concentration ✓✓ (2)
- 3.2 3.2.1 • Transpiration pull✓ (2)
 • Osmotic flow✓
- 3.2.2 • Water transports nutrients from the soil to the roots and to the leaves.✓
 • Water transports the products of photosynthesis from the leaves to the plant organs for storage.✓
 • Water provides structural support to plants.✓
 • Water regulates plant temperature.✓
 • Water provides the medium for metabolic processes such as photosynthesis and breathing.✓ Any 2 (2)
- 3.2.3 *The stoma* ✓✓ (2)

3.2.4

Line graph shows the relationship between the time of day versus the rate of water absorption. (6)



Tyd van die dag / Time of day (ure/hours)

CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: correct calibrations and labelled (Time of the day) ✓
- Y-axis: correct calibrations and labelled (Rate of water absorption) ✓
- Correct unit (ml/hour and hour) ✓
- Line graph ✓
- Accuracy ✓

- 3.2.5
- Transpiration is the process by which water is lost as vapor through the stomata into the atmosphere. ✓
In plants that are directly exposed to the sun, the rate of transpiration will be much higher than in plants in the shade, and therefore they will lose more water and wilt faster. ✓
Transpiration lowers the water potential in the leaves, and this causes the leaves to exert a suction force known as transpirational pull.
 - Transpirational pull, along with other forces, causes water to move from the roots to the leaves through osmotic flow, ✓
and during the night, when transpiration does not occur as quickly
 - Because the stomata are closed, the leaves will become turgid/stiff again. ✓
- (4)

[29]**QUESTION 4**

- 4.1 **Macro-mineral**
Minerals required by plants in large quantities. ✓✓ (2)
- Micro-mineral**
Mineral required by plants in small quantities. ✓✓ (2)
- 4.2 4.2.1 • Nitrogen✓
 • Phosphorus✓
 • Potassium✓ (3)
- 4.2.2 14%✓ (1)
- 4.2.3 $\%P = \frac{3}{6} \times 14 = 7\%$ ✓✓ (4)
- 4.3 • Soil structure✓
 • Soil pH✓ (2)
- 4.4 4.4.1 • Top-dressing✓ (1)

	4.4.2	• Fertigation ✓		(1)
	4.4.3	• Broadcasting ✓		(1)
	4.4.4	• Band placement ✓		(1)
4.5	4.5.1	• Green manure ✓ • Compost ✓ • Farm manure ✓ • Sewage waste ✓	Any 2	(2)
	4.5.2	• Not all organic fertilisers are eco-friendly. ✓ • Some contain pathogens. ✓ • Too much fertiliser can leach into the soil water or run off into rivers and oceans. ✓ • This leads to algal bloom and eutrophication of water resources, killing aquatic life forms. ✓	Any 2	(2)
				[22]
TOTAL SECTION B:				[65]
GRAND TOTAL:				[100]