

Section A

Question 1

- 1.1 1.1.1 B✓✓
- 1.1.2 A✓✓ or B✓✓ or C✓✓
- 1.1.3 B✓✓ C✓✓
- 1.1.4 C✓✓
- 1.1.5 B✓✓
- 1.1.6 D✓✓
- 1.1.7 C✓✓
- 1.1.8 B✓✓
- 1.1.9 D✓✓
- 1.1.10 C✓✓

(20)

- 1.2 1.2.1 E✓✓
- 1.2.2 D✓✓
- 1.2.3 G✓✓
- 1.2.4 A✓✓ or D✓✓
- 1.2.5 B✓✓ or F✓✓

(10)

- 1.3 1.3.1 Humus✓✓ or Organic colloid✓✓
- 1.3.2 Cotyledons / Seed lobes✓✓
- 1.3.3 Pruning✓✓
- 1.3.4 Cross-pollination✓✓
- 1.3.5 Bulb✓✓

(10)

1.4	1.4.1	Transpiration✓✓	
	1.4.2	Green manuring✓✓	
	1.4.3	Free water✓✓ or Gravitational water✓✓ or Saturated flow✓✓ or Percolation water✓✓ or Seepage water✓✓	
	1.4.4	Vegetative nucleus✓✓ or tube nucleus✓✓	
	1.4.5	Homozygotic✓✓	
			(10)
		Total Section A	50

Section B

Question 2: Soil Science

2.1	Description of soil horizons		
	2.1.1	O horizon	
		- Topsoil horizon✓ / Upper layer of the soil✓	(1)
		- High percentages of organic matter.✓ / Fresh and partly decomposed organic matter✓ / formation of humus takes part here✓	(1)
		- not deeper than 300mm✓	(1)
		- does not occur in areas that is covered with pastures✓	(1)
		- Develops in high rainfall areas with moderate climate. ✓	(1)
		- Seldom prevalent in South Africa. ✓ (any 3 marks)	(1)
	2.1.2	C horizon	
		- Usually lies below B-horizon. ✓	(1)
		- part of substrata✓	(1)
		- no characteristics of other horizons✓	(1)
		- Consist of loose rock material. ✓/ Unhardened rock material✓	(1)
		- There is no horizon development below it. ✓	(1)

- Usually lies above the R-horizon. ✓ (any 3) (1)

2.2

Soil Profile

Soil Horizon

- it is a vertical exposure of a number of soil horizons ✓ / succession of horizons that are visible in a vertical succession through the soil ✓

- it is a clearly identifiable layer of soil. ✓

(2)

2.3

2.3.1

Yellow colour

- The soil is highly leached. ✓ / not fertile. ✓ (1)

- It has fewer iron compounds. ✓ (1)

- The soil is must first be drained before deeprooted crops can be planted. ✓ (1)

- Iron underwent chemical changes. ✓ (1)

- Iron is hydrated. ✓ (1)

- Shortage of oxygen because of water logging. ✓ (1)

- limonite is present in the soil. ✓ (1)

- Degree of water saturation. ✓ (any 3) (1)

2.3.2

Dark colour

- Soil consists of organic matter. ✓ (1)

- It is rich in plant nutrients. ✓ / fertile soil. ✓ / has a high cation exchange capacity. ✓ (1)

- May be well drained and aerated. ✓ (1)

- Well aerated. ✓ (1)

- Good water retention capacity. ✓ (1)

- Absorbs and emits more heat. ✓ (1)

- Day and night temperatures vary greatly. ✓ (1)

- The soil has a good structure. ✓ (1)

		Suitable for most crops. ✓	(1)
		High microbial activity	(1)
		- Soil is warmer. ✓	(any 5) (1)
2.4		Textural classes	
	2.4.1	Sandy soil ✓ / A ✓ / B ✓	(1)
	2.4.2	Loamy sand ✓ / B ✓ / C ✓	(1)
	2.4.3	Sandy loam ✓ / C ✓	(1)
	2.4.4	Sandy clay loam ✓ / D ✓	(1)
	2.4.5	Clay loam ✓ / E ✓	(1)
2.5		- Quantity and type of irrigation must be controlled. ✓ / avoid flood irrigation. ✓	(1)
		- Organic matter should be added to improve soil structure. ✓	(1)
		- Cement irrigation furrows. ✓	(any 2) (1)
2.6	2.6.1	(a) (B) ✓	(1)
		(b) (A) ✓	(1)
		(c) (C) ✓	(1)
	2.6.2	Glass tube B	
		- Loam soil because capillary rise of water ✓ is moderate. ✓ the proportion of micro-pores and macro-pores are the same. ✓ (any 2)	(2)
		Glass tube A	
		- Sand soil because rise in water is low ✓ since there are too many macro pores in the soil. ✓	(2)
		Glass tube C	
		- Clay soil because of the highest water rise ✓ due to micro pores. ✓	(2)
2.7		- Prismatic structure. ✓	(1)
		- Aggregates are vertically oriented. ✓	(1)
		- Aggregates are longer than they are broad. ✓	(1)

They are found in the arid or semi-arid regions. ✓ (1)

Agregates can be as long as 15cm. ✓ (any 3) (1)

[35]

Question 3: Soil Science

3.1 3.1.1 Hydrolysis

- It is the reaction of the mineral with water to form a new softer mineral ✓ (1)

- Feldspars ✓ and micas ✓ erode through hydrolysis (2)

- e.g. $K_2Al_2Si_2O_8 + H_2O \longrightarrow H_4Al_2Si_2O_8 + 2KOH$ ✓ (1)

Silicate molecule + water \longrightarrow Kaolin + Potassium hydroxide ✓ (1)

- This means that Kaolin is softer than potassium silicate. ✓ (1)

- And potassium is released as plant nutrient. ✓ (any 4 marks) (1)

3.1.2 Hydration

- It is the adsorption of water to the mineral. ✓ (1)

- Water moves into mica mineral and make it softer. ✓ (1)

- This will lead to soil erosion. ✓ (1)

- e.g. $Fe_2O_3 + H_2O \longrightarrow Fe_2O_3 \cdot 3H_2O$ ✓ (1)

Red haematite \longrightarrow yellow limonite ✓ (any 4) (1)

3.1.3 Solution / acid

- Some components of rocks may be readily dissolved and leach away. ✓ (1)

- This cause breaking up of the rocks. ✓ (1)

- Carbondioxide reacts with water to form carbonic acid ✓ (1)

- Carbonic acid reacts with minerals to assist with erosion ✓ (1)

- Eg. Carbonic acid will react with limestone to form more soluble calcium bicarbonate✓ (any 2) (1)
- 3.2 Soil slope orientation
- 3.2.1 Northern slope ✓ - it is warmer without frost. ✓ / more direct sun. ✓ (2)
- 3.2.2 Southern slope ✓ - it is cooler with occasional frost. ✓ / less direct sun. ✓ (2)
- 3.2.3 Northern slope is hotter than Southern slope ✓ - because sun rays are almost direct to the soil and more heat is absorbed. ✓ (2)
- 3.2.4 - Northern slope ✓ (1)
- 3.3 Cation exchange in colloids
- 3.3.1 - There will be an exchange ✓ of cations ✓ between the colloids ✓ and the soil solution. ✓ /
 - The adsorbed Na^+ and H^+ ions ✓ on the colloids ✓ will be replaced by the Mg^{++} and Ca^{++} ✓ in the solution ✓ /
 - Mg^{++} and Ca^{++} will displaced ✓ Na^+ and H^+ ions ✓ that will end up in the soil solution ✓ and leached out ✓ (4)
 - the exchange will take place until an equilibrium is reached in the soil ✓ (any 4 marks)
- 3.3.2 - The ions in the solution are more positively charged than those in the colloids and will replace them ✓ (1)
- Cations will exchange according to the principles of the liotrope series ✓ (1)
- A bivalent cation will replace two monovalent cations. ✓ (1)
- Cations will exchange according to the difference in concentration between the cations adsorbed to the colloid and those in the soil solution ✓ (any 1) (1)
- 3.3.3 - The concentration of potassium cations (K^+) will increase. ✓ (1)
- The concentration of chlorine ions (Cl^-) will increase. ✓ (1)
- 3.4
- 3.4.1 - H^+ ✓ / NH_4^+ ✓ / Al^{+++} ✓ / Mn^{++} ✓ pH is less than 7 ✓ (2)
- 3.4.2 - Ca^{++} and Mg^{++} ✓ pH is neutral ✓ / pH 7 (2)
- 3.4.3 - Na^+ and K^+ ✓ pH is higher than 7 ✓ (2)

3.5 Characteristics of white brack soil

- Less than 15% of the cation exchange capacity is occupied by sodium ion. ✓ (1)
- Soils have high concentration of salt that are toxic to plants. ✓ (1)
- pH is usually less than 8.5. ✓ (1)
- The soils have well-developed structure. ✓ (1)
- Excessive salts can be leached out if drainage is adequate. ✓ (1)
- Soil solution has a high osmotic pressure. ✓ (1)
- Soil water is less available to plants. ✓ (1)
- Soil surface tends to be powdered. ✓ (1)
- White salt precipitates form on the upper parts of the soil. ✓ (any 5) (1)

[35]

Question 4: Plant Reproduction

4.1 Examples of vegetative parthenocarpy

- 4.1.1
 - Egg fruit / Brinjal ✓ (1)
 - Banana / Plantain ✓ (1)
 - Oranges (Washington navel) ✓ (1)
 - Fig ✓ (any 3) (1)
- 4.1.2
 - Strawberry ✓ (1)
 - Sweetpotato ✓ (1)
 - Raspberry ✓ (1)
 - Grasses like Kikuyu ✓ (any 2) (1)
- 4.1.3
 - Giberellin / Auxin. ✓ (1)

4.2 Factors causing ablation

- Biological factors ✓ (1)

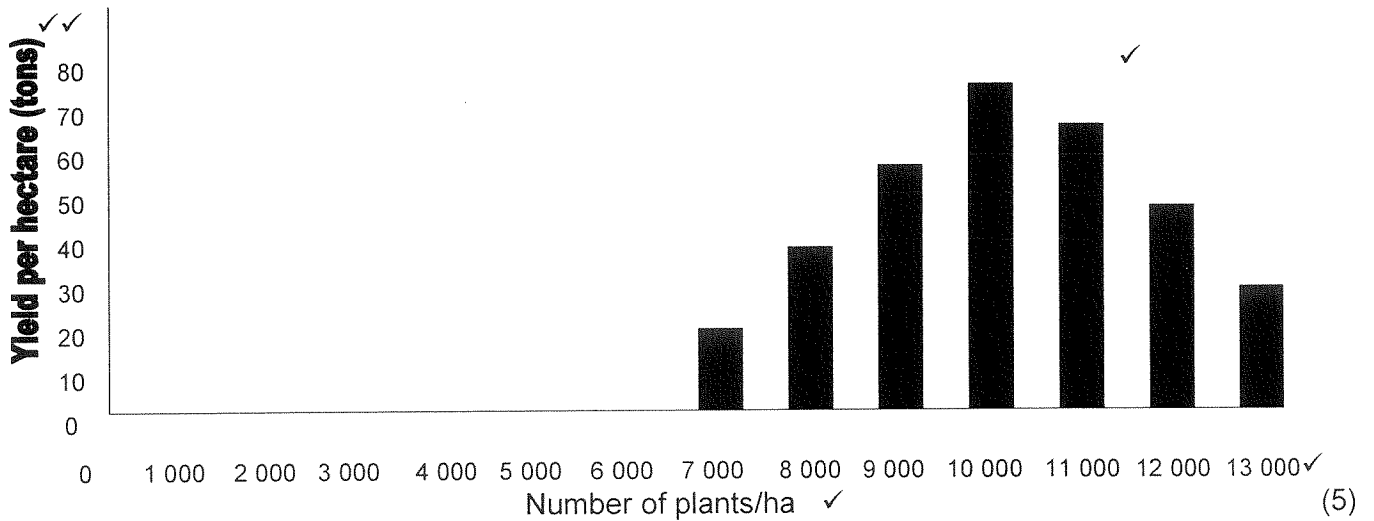
		- Soil factors✓	(1)
		- Climatic conditions✓	(1)
		- Spraying of trees✓	(1)
		- Too much fruit or flowers on one tree✓	(1)
		(any 4)	
4.3		- Grafting wax / Sealant ✓	(1)
4.4	4.4.1	A Stigma✓	(1)
		C Style✓	(1)
		E Petal crown / corolla✓	(1)
		G Locule✓	(1)
		I Sepal crown / corolla / Calyx✓	(1)
	4.4.2	- Gynoecium ✓	(1)
	4.4.3	- H✓	(1)
	4.4.4	- E✓	(1)
	4.4.5	- H✓	(1)
	4.4.6	- I✓	(1)
	4.4.7	- Monoecious flower ✓ it has both male and female reproductive organs together. ✓	(2)
4.5		- Birds✓	(1)
		- Higher animals✓	(1)
		- Insect✓	(1)
		(any 2)	
4.6	4.6.1	- Thickened underground stem✓ that grows parallel to the soil surface✓	(2)
		- e.g. Fern✓	(1)
		Lilly✓	(1)
		Ginger✓	(1)
		Reed✓	(1)

- Iris ✓ (any 2) (1)
- 4.6.2 - Plant shoots which are cut from the mother plant ✓ and which are used for propagating plants. ✓ (2)
- 4.6.3 Budding
- Transfer of a bud from a budding stem ✓ to a root stem or root stock. ✓ (2)
- Grafting
- Transfer of a part of one plant to another plant of the same botanical ✓ species in such a way that the barks / cambium of the two plants touch one another intimately. ✓ (2)

[35]

Question 5: Plant Nutrition

5.1.1



- 5.1.2 10 000 plants/ha ✓✓ (2)
- 5.1.3 At low plant density there was an increase in yield/ha because plants were not overcrowded ✓ and the competition for light, moisture and nutrients ✓ was still low. At high densities (higher than 10 000) plants were overcrowded and the competition for light, moisture and nutrients ✓ was high resulting in lower yields. (3)

5.2 5.2.1 Superphosphate

$$\begin{aligned} \text{Unit value} &= \frac{\text{Price per ton}}{\% \text{ plant nutrient}} \checkmark \\ &= \frac{R1865}{11.3} \checkmark \\ &= R165.00 \checkmark \end{aligned}$$

(3)

Raw Phosphate

$$\begin{aligned} \text{Unit value} &= \frac{\text{Price per ton}}{\% \text{ plant nutrient}} \checkmark \\ &= \frac{R1958}{12.8} \checkmark \\ &= R153.00 \checkmark \end{aligned}$$

(3)

5.2.2 Raw Phosphate. \checkmark The unit price of phosphorus in Raw Phosphate is less / cheaper than that in Superphosphate. $\checkmark\checkmark$

(3)

5.3 Reasons for applying liquid fertilisers

- It is easy to apply to crops where access is a problem. \checkmark (1)
- Highly concentrated fertilisers can be used in diluted form. \checkmark (1)
- It saves labour. \checkmark (1)
- Distribution of fertiliser is more uniform. \checkmark (1)
- It is cheap as no extra apparatus is required. \checkmark (1)
- Transport and storage is cheaper. \checkmark (1)
- Nutrients are readily available to the plants because they reach roots immediately / Soluble. \checkmark (any 4) (1)

5.4 Effects of acid soils

- Lower pH with toxic quantity of aluminium may poison the plants. \checkmark (1)
- Phosphate fixing takes place due to the formation of tri-calcium phosphate which is inaccessible. \checkmark (1)
- The solubility of molybdenum decreases with increasing soil acidity. \checkmark (1)

- In a very acid soil, the quantity of exchangeable Calcium and Magnesium ions is very small. ✓ (1)
- Mineralisation of organic matter in acid soil is slow because microbes are very sensitive to soil acidity. ✓ (any 3) (1)
- 5.5 Requirements for photosynthesis
- 5.5.1 - Sufficient sunlight ✓ (1)
- Chlorophyll molecule ✓ (1)
- Suitable temperature ✓ (1)
- Optimum soil moisture condition ✓ (1)
- Enough carbon dioxide present ✓ (1)
- 5.5.2 - Oxygen gas ✓ (1)
- Glucose ✓ (1)
- ATP ✓ (1)
- NADH₂ ✓ (any 3) (1)
- 5.6 - Urea ✓ (1)
- Ammonium sulphate ✓ (1)
- Potassium nitrate ✓ (1)
- Micro elements supplements ✓ (1)
- Potassium sulphate ✓ (1)
- Phosphoric acid. ✓ (any 4) (1)
- 5.7 - Band placing / Basal ✓ (1)
- Broadcasting ✓ (1)
- Aero-application ✓ (1)
- Foliar/Leaf application ✓ (1)
- Gas/Liquid application ✓ (any 4) (1)
- 5.8 - Urea ✓ (1)
- Ammonium nitrate ✓ (1)
- LAN ✓ (1)

- Ammonium sulphate ✓		(1)
- Superphosphate ✓		(1)
- Raw phosphate ✓		(1)
- Potassium sulphate ✓		(1)
- Potassium chloride ✓		(1)
- Any fertiliser mixture / Compound fertiliser ✓	(any 3)	
	Total Section B	150
	Grand Total	200

Afdeling A

LANDBOUWETENSKAP HG V1

Vraag 1

- 1.1 1.1.1 B✓✓
- 1.1.2 A✓✓ / B✓✓ / C✓✓
- 1.1.3 B✓✓ / C✓✓
- 1.1.4 C✓✓
- 1.1.5 B✓✓
- 1.1.6 D✓✓
- 1.1.7 C✓✓
- 1.1.8 B✓✓
- 1.1.9 D✓✓
- 1.1.10 C✓✓

(20)

- 1.2 1.2.1 E✓✓
- 1.2.2 D✓✓
- 1.2.3 G✓✓
- 1.2.4 A✓✓ / D✓✓
- 1.2.5 B✓✓ / F✓✓

(10)

- 1.3 1.3.1 Humus✓✓ / organic colloid✓✓
- 1.3.2 Saadlobbe✓✓
- 1.3.3 Snoei✓✓
- 1.3.4 Kruisbestuwing✓✓
- 1.3.5 Bol✓✓

(10)

1.4	1.4.1	Transpirasie✓✓	
	1.4.2	Groenbemesting✓✓	
	1.4.3	Vrywater✓✓ / Syferwater✓✓ / gravitasiewater✓✓ / perkolasiewater✓✓	
	1.4.4	Vegetatiewe kern✓✓ / Buiskern✓✓	
	1.4.5	Homosigoties✓✓	
			(10)
		Totaal Afdeling A	50

Afdeling B

Vraag 2: Grondkunde

2.1	Beskrywing van grondhorisonte	
	2.1.1	O horisont
		- Boggrondhorisont✓ / Boonste laag van grond✓ (1)
		- Hoër persentasies organiese materiaal ✓ / Vars en gedeeltelik ontbinde organiese materiaal ✓ / vorming van humus vind hier plaas✓ (1)
		- nie dieper as 300mm✓ (1)
		- Ontwikkel nie in gebiede wat met grasse bedek is nie✓ (1)
		- Ontwikkel in hoë reënval areas met 'n gematigde klimaat ✓ (1)
		- Kom selde in Suid-Afrika voor ✓ (1)
	2.1.2	C horisont
		- Aangetref onder B-horisont ✓ (1)
		- Deel van die substrata✓ (1)
		- Geen kenmerke van ander horisonte✓ (1)
		- Bestaan uit los rots materiaal ✓ / Nie verharde rots materiaal ✓ (1)
		- Geen horisont ontwikkeling onder dit nie ✓ (1)

		- Lê gewoonlik net bo R-horisont ✓ (enige 3)	(1)				
2.2		<table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="text-align: left; padding: 5px;">Grondprofiel</th> <th style="text-align: left; padding: 5px;">Grondhorisont</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">- dit is 'n vertikale ontbloting van 'n aantal grondhorisonte ✓ / die opeenvolging van horisonte wat sibaar is tydens die ontbloting daarvan ✓</td> <td style="padding: 5px;">- dit is 'n duidelik onderskeibare laag van grond ✓</td> </tr> </tbody> </table>	Grondprofiel	Grondhorisont	- dit is 'n vertikale ontbloting van 'n aantal grondhorisonte ✓ / die opeenvolging van horisonte wat sibaar is tydens die ontbloting daarvan ✓	- dit is 'n duidelik onderskeibare laag van grond ✓	(2)
Grondprofiel	Grondhorisont						
- dit is 'n vertikale ontbloting van 'n aantal grondhorisonte ✓ / die opeenvolging van horisonte wat sibaar is tydens die ontbloting daarvan ✓	- dit is 'n duidelik onderskeibare laag van grond ✓						
2.3	2.3.1	Geel kleur					
		- Die grond is hoog geloog ✓	(1)				
		- Dit het minder yster verbindings ✓	(1)				
		- Die grond is moet eers gedreineer word voordat diepwortelgewasse geplant kan word ✓	(1)				
		- Yster het chemies verander ✓	(1)				
		- Yster is hidreer ✓	(1)				
		- Tekorte aan suurstof weens waterversadiging ✓	(1)				
		- Limoniet teenwoordig in grond ✓	(1)				
		- Mate van water versadiging. ✓ (enige 3)	(1)				
	2.3.2	Donker kleur					
		- Grond bevat baie organies materiaal ✓	(1)				
		- Dit is ryk aan plant voedings elemente ✓ / vrugbare grond ✓ / het 'n hoë kation uitruilvermoë ✓	(1)				
		- Gewoonlik goed gedreineer ✓	(1)				
		- Gewoonlik goed deurlug ✓	(1)				
		- Goeie waterhouvermoë ✓	(1)				
		- Adsorbeer en uitstraling van meer hitte ✓	(1)				
		- Dag en nag temperature varieer meer ✓.	(1)				
		- Die grond het 'n beter struktuurontwikkeling ✓.	(1)				

- Die grond is geskik vir die meeste gewasse ✓. (1)
 - Die grond het 'n hoër mikrobe-aktiwiteit ✓. (1)
 - Grond is warmer ✓ (any 5) (1)
- 2.4 Tekstuur klasse
- 2.4.1 Sanderige grond ✓ / leemsandgrond ✓ / A ✓ / B ✓ (1)
 - 2.4.2 Leemsandgrond ✓ / Sandleemgrond ✓ / B ✓ / C ✓ (1)
 - 2.4.3 Sand-leem ✓ / C ✓ (1)
 - 2.4.4 Sand-klei-leem ✓ / D ✓ (1)
 - 2.4.5 klei-leem ✓ / E ✓ (1)
- 2.5
- Die hoeveelheid en tipe besproeiing moet beheer word ✓ / Vvermy vloedbesproeiing ✓ (1)
 - Organiese materiaal moet tot grond toegevoeg word om die grondstruktuur te verbeter ✓ (1)
 - Besproeiingvore moet van sement gemaak word ✓ (enige 2) (1)
- 2.6
- 2.6.1 (a) (B) ✓ (1)
 - (b) (A) ✓ (1)
 - (c) (C) ✓ (1)
 - 2.6.2 Glasbuis B
 - Leemgrond omdat die styging van water in ✓ die kapillêre buis matig is ✓ / die verhouding van mikro- tot makro-porieë ✓ (2)
 - Glasbuis A
 - Sandgrond omdat die styging van water min ✓ is aangesien daar te veel makro-porieë is in die grond ✓ (2)
 - Glasbuis C
 - Kleigrond omdat dit die hoogste styging water ✓ toon weens die baie mikro-porieë ✓ (2)
- 2.7 - Prismatiese struktuur ✓ (1)

- Aggregate is vertikaal georiënteer ✓ (1)
- Aggregate is langer as wat hulle breed is ✓ (1)
- Aggregate kan so lank as 15 cm wees ✓ (enige 3) (1)

[35]

Vraag 3: Grondkunde

3.1 Hidrolise

- Dit is die reaksie van die mineraal met water om 'n nuwe mineraal te vorm wat sagter is ✓ (1)
- Veldspate ✓ en mikas ✓ verweer deur middel van hidrolise ✓ (1)
- bv. $K_2Al_2Si_2O_8 + H_2O \longrightarrow H_2Al_2Si_2O_8 + KOH$ ✓ (1)
- Silikaatmolekuul + water \longrightarrow Kaolien + kaliumhidroksied ✓ (1)
- Dit beteken dat Kaolien is sagter as kaliumsilikaat ✓ (1)
- En kalium word as plantvoedsel vrygestel ✓ (enige 4) (1)

Hidrasie

- Dit is die absorpsie van water tot die mineraal ✓ (1)
- Water beweeg tot in die mika mineraal en maak dit sagter ✓ (1)
- Dit sal lei tot verwerking in die grond ✓ (1)
- e.g. $Fe_2O_3 + H_2O \longrightarrow Fe_2O_3 \cdot 3H_2O$ ✓ (1)
- rooi haematiet + water \longrightarrow geel limoniet ✓ (enige 4) (1)

Oplossing

- Sekere bestanddele van rots kan geredelik opgelos word en loog weg ✓ (1)
- Dit veroorsaak die opbreek van rots ✓ (1)
- Koolstofdiksied reageer met water om koolsuur te vorm ✓ (1)

- Koolsuur reageer met minerale om verwerking aan te help✓ (1)
 - Koolsuur reageer met kalksteen om 'n meer oplosbare kalsiumwaterstofkarbonaat te vorm✓ (enige 2) (1)
- 3.2 Helling van grond
- 3.2.1 Noordelike helling ✓ - is warmer sonder ryp ✓ / meer direkte son✓ (2)
 - 3.2.2 Suidelike helling ✓ - is koeler met ryp slegs by geleentheid ✓ / minder direkte son✓ (2)
 - 3.2.3 Noordelike helling is warmer as Suidelike helling ✓ - omdat straling van son byna direk op grond val en meer hitte word geabsorbeer ✓ (2)
 - 3.2.4 - Noordelike helling ✓ (1)
- 3.3 Kation uitruiling en kolloïedes
- 3.3.1 - Daar sal 'n uitruiling✓ van katione ✓ wees tussen die grondkolloïedes✓ en die grondoplossing ✓ /
 - Die geadsorbeerde Na^+ en H^+ ione✓ op die grondkoloïedes ✓ sal verplaas✓ word deur die Mg^{++} en Ca^{++} ione in die grondoplossing✓
 - Mg^{++} en Ca^{++} ione✓ sal Na^+ en H^+ ione verplaas✓ wat dan in die grondoplossing beland✓ en geloog word✓ (enige 4) (4)
 - 3.3.2 - Die ione in die grondoplossing is meer positief gelaai as die aan die koloïede an sal hul verplaas ✓ (1)
 - Katione sal uitruil volgens die beginsel van die liotropereeks✓ (1)
 - 'n Bivalente kation sal uitruil met twee monovalente katione✓ (1)
 - Katione sal uitruil volgens die verskil in konsentrasie tussen die katione geadsorbeer an die kolloïed en die in die grondoplossing✓ (enige 1) (1)
 - 3.3.3 - Die konsentrasie van kalium katione (K^+) sal toeneem ✓ (1)
 - Die konsentrasie van chloor ione (Cl^-) sal toeneem ✓ (1)
- 3.4
- 3.4.1 - H^+ ✓ / NH_4^+ ✓ / Al^{+++} ✓ / Mn^{++} ✓ pH is laer as 7 ✓ (2)
 - 3.4.2 - Ca^{++} en Mg^{++} ✓ pH is neutraal ✓ / pH 7 (2)

- 3.4.3 - Na⁺ en K⁺ ✓ pH is hoër as 7 ✓ (2)
- 3.5 Kenmerke van witbrakgronde
- Minder as 15% van die kation-uitruilkapasiteit word deur natrium ione in beslag geneem ✓ (1)
 - Gronde het 'n hoë konsentrasie van soute wat toksies is vir die plant ✓ (1)
 - pH is gewoonlik minder as 8.5. ✓ (1)
 - Die gronde het 'n goed ontwikkelde struktuur ✓ (1)
 - Oormatige soute kan uitgeloog word as dreinerings dit sal toelaat ✓ (1)
 - Grondoplossing het 'n hoë osmotiese druk ✓ (1)
 - Grondwater is minder beskikbaar vir plante ✓ (1)
 - Die grondoppervlakte neig om te verpoeier ✓ (1)
 - Wit sout neerslae vorm op oppervlakte van grond. ✓ (enige 5) (1)

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Vraag 4: Plantreproduksie

- 4.1 Voorbeelde van vegetatiewe partenokarpie
- 4.1.1 - Eivrug / Brinjal ✓ (1)
- Piesang ✓ / plantain ✓ (1)
- Lemoene ✓ (Washington navel) ✓ (1)
- Vy ✓ (enige 3) (1)
- 4.1.2 - Aarbei ✓ (1)
- Patat ✓ (1)
- Framboos ✓ (1)
- Grasse soos kikuju ✓ (enige 2) (1)
- 4.1.3 - Giberellien. ✓ / Auksien ✓ (1)

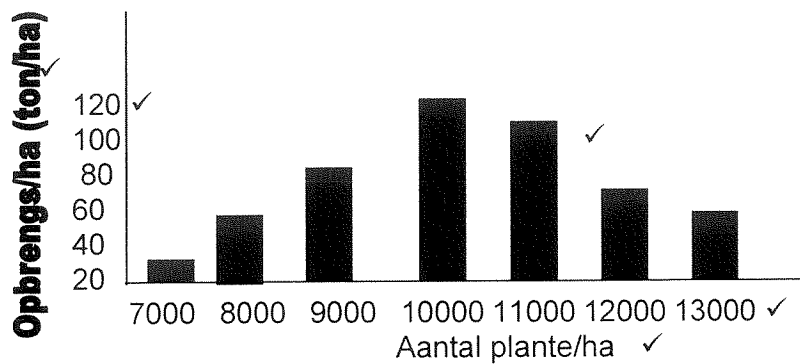
- 4.2 Faktore wat afspeen veroorsaak
- Biologiese faktore ✓ (1)
 - Grondfaktore ✓ (1)
 - Klimaatstoestande ✓ (1)
 - Spuit van bome ✓ (1)
 - Te veel vrugte en blomme op een boom ✓ (enige 4) (1)
- 4.3 - Entwas / Seëlmiddel ✓ (1)
- 4.4 4.4.1 A Stempel ✓ (1)
- C Styl ✓ (1)
 - E Kroonblare ✓ (1)
 - G Vrughok ✓ (1)
 - I Kelkblaar ✓ (1)
- 4.4.2 - Ginesium / vrugbeginsel ✓ (1)
- 4.4.3 - H ✓ (1)
- 4.4.4 - E ✓ (1)
- 4.4.5 - H ✓ (1)
- 4.4.6 - I ✓ (1)
- 4.4.7 - Tweeslagtige blom ✓ dit bevat manlik en vroulike geslagsorgane in dieselfde blom ✓ (2)
- 4.5 - Voëls ✓ (1)
- Hoër diere ✓ (1)
 - Insekte ✓ (enige 2) (1)
- 4.6
- 4.6.1 - Verdikte ondergrondse stingel ✓ wat parallel met die

- grondoppervlak groei ✓ (2)
- e.g. Varing ✓ (1)
- Lelie ✓ (1)
- Gemmer ✓ (1)
- Reed ✓ (1)
- Iris ✓ (enige 2) (1)
- 4.6.2 - Plantlote word vanaf die moederplant gesny ✓ en word gebruik om plante te vermeerder ✓ (2)
- 4.6.3 Okulering
- Oordra van 'n ogie van die bostam ✓ na 'n onderstam ✓ (2)
- Enting
- Oordrag van 'n deel van een plant na 'n ander plant met dieselfde botaniese eienskappe ✓ op so 'n wyse dat die bas (kambium) van die twee dele goed kontak maak ✓ (2)

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Vraag 5: Plantvoeding

5.1.1



(5)

- 5.1.2 10 000 plante/ha ✓✓

(2)

- 5.1.3 By 'n lae plantdigtheid was daar 'n toename in opbrengs omdat plante mekaar nie verdring het nie ✓ en minder kompetisie vir lig, grondvog en voedingstowwe. ✓ By hoë plantdigthede was die plante oorbevolk (meer 10 000) ✓ was te hoog en gevolglik was opbrengste kleiner ✓ weens die kompetisie-effek vir lig, water en voedingstowwe ✓ (enige 3) (3)
- 5.2 5.2.1 Superfosfaat
- Eenheidswaarde = $\frac{\text{Prys per ton}}{\% \text{ plantvoedingstof}}$ ✓
 $= \frac{R1865}{11.3}$ ✓
 $= R165.00$ ✓ → (3)
- Ru-fosfaat
- Eenheidswaarde = $\frac{\text{Prys per ton}}{\% \text{ plantvoedingstof}}$ ✓
 $= \frac{R1985}{12.8}$ ✓
 $= R155.08$ ✓ → (3)
- 5.2.2 Ru-Fosfaat ✓ Die eenheidswaarde van ru-fosfaat is minder as die van Superfosfaat / goedkoper per eenheid as superfosfaat ✓ ✓ (3)
- 5.3 Redes waarom vloeibare bemesting toegedien word
- Maklik om aan gewasse toe te dien waar toegang 'n probleem is ✓ (1)
 - Hoogs gekonsentreerde formulasies kan in verdunde vorm gebruik word ✓ (1)
 - Dit spaar arbeid ✓ (1)
 - Distribution of fertiliser is more uniform ✓ (1)
 - Transport and storage cheaper ✓ (1)
 - Redelik goedkoop aangesien nie spesiale aparate benodig nie ✓ (1)
 - Voedingstowwe is redelik beskikbaar vir die plante aangesien dit die wortels onmiddellik bereik (enige 4) (1)
- 5.4 Effekte van suurgrond
- Laer pH waarde en oplosbaarheid van aluminium neem toe wat plante kan vergiftig ✓ (1)