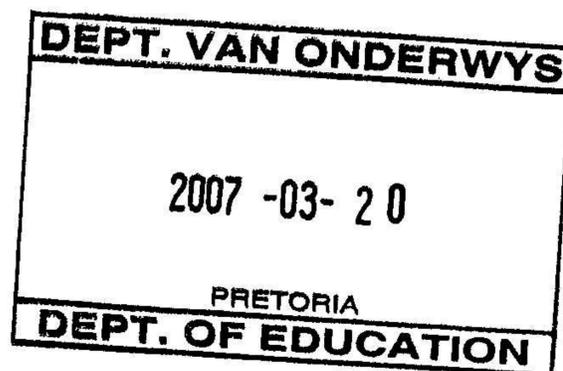


| AFDELING A: | | VRAAG 1 | |
|-------------|--------|----------------------|------|
| 1.1 | 1.1.1 | B✓✓ | |
| | 1.1.2 | C✓✓ | |
| | 1.1.3 | C✓✓ | |
| | 1.1.4 | C✓✓ | |
| | 1.1.5 | C✓✓ | |
| | 1.1.6 | C✓✓ | |
| | 1.1.7 | D✓✓ | |
| | 1.1.8 | A✓✓ | |
| | 1.1.9 | C✓✓ | |
| | 1.1.10 | B✓✓ | (20) |
| 1.2 | 1.2.1 | E✓✓ | |
| | 1.2.2 | D✓✓ | |
| | 1.2.3 | B✓✓ | |
| | 1.2.4 | F✓✓ | |
| | 1.2.5 | G✓✓ | (10) |
| 1.3 | 1.3.1 | O-horisont✓✓ | |
| | 1.3.2 | Klei✓✓ | |
| | 1.3.3 | Humus✓✓ | |
| | 1.3.4 | Mitose / seldeling✓✓ | |
| | 1.3.5 | Breedwerpig ✓✓ | (10) |
| 1.4 | 1.4.1 | Deflokkulasie ✓✓ | |
| | 1.4.2 | Groen bemesting ✓✓ | |
| | 1.4.3 | Hidrolise ✓✓ | |
| | 1.4.4 | Geabsorbeer ✓✓ | |
| | 1.4.5 | Die O-horisont ✓✓ | (10) |



TOTAAL AFDELING A: 50

Afdeling B**Vraag 2**2.1 **Vorms van waterverlies**

- | |
|---------------------------|
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- 2.1.1 Afloop ✓ (1)
- 2.1.2 Verdamping / Transpirasie ✓ (1)
- 2.1.3 Transpirasie ✓ (1)
- 2.1.4 Afloop / Perkolasië / Verdamping ✓ (1)
- 2.1.5 Verdamping / Afloop / Perkolasië ✓ (1)
- 2.1.6 Transpirasie ✓ (1)

2.2

| | | Klaigrond | Sandgrond |
|-------|----------------|---|--|
| 2.2.1 | Bewerkbaarheid | Moeilik bewerkbaar (1) ✓ Meer smering (1) ✓ (Enige 1) | Maklik om te bewerk (1) ✓ Minder smering (1) ✓ (Enige 1) |
| 2.2.2 | Waterhouvermoë | Hou meer water vir 'n langer tyd (1) ✓ | Stoor min water vir kort tyd (1) ✓ |
| 2.2.3 | Deurlugting | Swak deurlug – meer mikro-porieë (1) ✓ | Goed deurlug – baie makro-porieë (1) ✓ |

(6)

- 2.3 2.3.1 Porieruimte is die ruimtes (spasies) wat bestaan tussen die gronddeeltjies of die totale volume van die makro- en mikro-porieë in die grond. ✓✓ (2)

- 2.3.2 - Hoe groter die deeltjiegroottes hoe groter is die volume van porieruimtes. ✓ (1)

- Kleiner deeltjies het kleiner ruimtes tussen hulle. ✓ (1)

- Groter deeltjies het groter ruimtes tussen hulle. ✓ (1)

2.4 2.4.1 **Grondtekstuur**

- Waterhouvermoë is groter (hoër) in gronde met fyner tekstuur. ✓ (1)

- Klei en leem gronde het meer mikro-porieë as sandgrond en hou dus meer water. ✓ (1)

- Sandgrond het meer makro-porieë en hou dus minder water. ✓ (1)

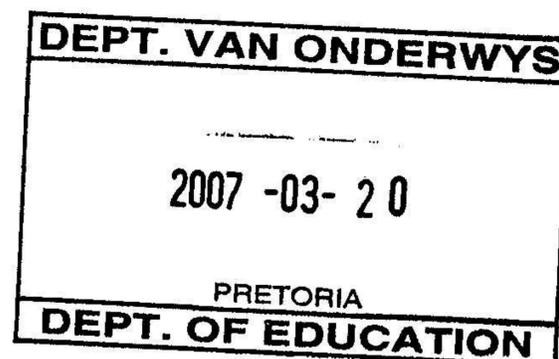
2.4.2 Organiese materiaalinhoud

- Waterkapasiteit van gronde neem toe met 'n toename in die hoeveelheid organiese materiaal. ✓ (1)
- Organiese materiaal het die vermoë om water vas te hou soos 'n spons. ✓ (1)
- Organiese materiaal sal die grondstruktuur verbeter. ✓ (1)
- Grondstruktuur sal die hoeveelheid mikro-porieë en waterhouvermoë bepaal. (enige 2) (1)

- 2.5
- Infiltrasietempo ✓ (1)
 - Watervashouvermoë ✓ (1)
 - Deurlugting ✓ (1)
 - Dreinerings ✓ (1)
 - Plant voedingstowwe ✓ (enige 3) (1)

- 2.6
- 2.6.1
- Dominante tekstuur by punt A is **klei**. ✓ (1)
 - Dominante tekstuur by punt C is **slik-leem**. ✓ (1)
- 2.6.2
- By punt A: % klei is 70 ✓ (1)
- % slik is 10 ✓ (1)
- % sand is 20 ✓ (1)
- By punt B: % klei is 20 ✓ (1)
- % slik is 40 ✓ (1)
- % sand is 40 ✓ (1)
- 2.7
- Positief** aan die Waterstofkant ✓ (1)
- Negatief** op die Suurstofkant ✓ (1)

[35]



Vraag 3

- 3.1 - Oksidasie – is die chemiese proses waar suurstof verbind met minerale ✓ om 'n nuwe produk (verbinding) te vorm ✓ (2)
- Reduksie – dit vind plaas onder toestande met lae suurstofvlakke – nat versuippte toestande. ✓ (1)
- Elektrone word oorgedra en gereduseerde elemente se elektronstruktuur verander. ✓ (1)
- 3.2 3.2.1 **Rypskade**
- Wanneer grondtemperatuur baie laag is (winter) kan swaar ryp voorkom. ✓ (1)
- Die voorkoms van ryp tydens die sensitiewe periodes van gewasse veroorsaak skade. ✓ (1)
- Ryp sensitiewe gewasse moet eerder op die noordelike hellings geplant word. ✓ (1)
- Suidelike hellings is meer vatbaar vir ryp. ✓ (enige 2) (1)
- 3.2.2 **Verdamping en transpirasie**
- Meer water gaan verlore deur transpirasie en verdamping as temperatuur hoog is. ✓✓ (2)
- Minder water gaan verlore deur transpirasie en verdamping as die temperatuur laer is. ✓✓ (enige 1) (2)
- 3.2.3 **Vroeë oeste**
- Vir vroeë oeste moet 'n warm sanderige grond op noordelike helling gekies word ✓ om die rypwording te verhaas. ✓ (2)
- 3.3 Ladingsdigtheid ✓ (1)
- Dit is die hoeveelheid lading per eenheidsoppervlakte. ✓ (1)
- Die beskikbare oppervlaktearea sal die aantal katione wat geadsorbeer raak bepaal. ✓ (1)
- Kation lading ✓ (1)
- Monovalente katione (K^+ , Na^+) sal nie so sterk adsorbeer word nie. ✓ (1)
- Bivalente katione (Mg^{++} , Ca^{++}) sal sterker geadsorbeer word. ✓ (1)
- Kation grootte ✓ (1)

- Gehidrateerde katione is meer belangrik as die grootte van die kation. ✓ (1)

- Watermolekules rangskik hulself om die katione. ✓ (1)

3.4 Grondklassifikasie

- Dit is die verdeling van gronde met dieselfde eienskappe ✓ in groepe ✓ OF die bepaling van die grondvorm ✓ en grondserie. ✓ (2)

3.5 - Illiet ✓ (1)

- Vermikuliet ✓ (1)

- Montmorilloniet ✓ (1)

- Kaoliniet ✓ (enige 3) (1)

3.6 - Kalsium ✓ (1)

- Magnesium ✓ (1)

- Kalium ✓ (1)

- Natrium ✓ (1)

3.7 - Grond verskaf ruimte waarin plantwortels anker. ✓ (1)

- Grond verskaf suurstof aan die wortels. ✓ (1)

- Grond verskaf plantvoedingsstowwe. ✓ (1)

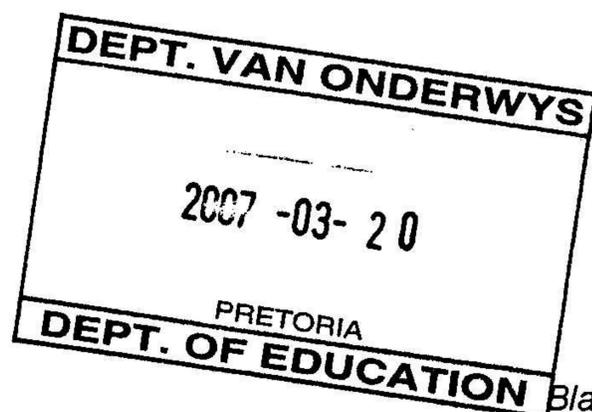
- Grond dien as 'n buffer teen groot temperatuurskommelings. ✓ (1)

- Grond verskaf water aan plante. ✓ (1)

3.8 Kation-uitruilkapasiteit

- Dit is die grootte van die lading op kleideeltjies ✓ per eenheid gewig van die grond. ✓ OF maatstaf van die vermoë van die kleideeltjies (kolloïedes) ✓ in die grond om katione te adsorbeer. ✓ (2)

[35]

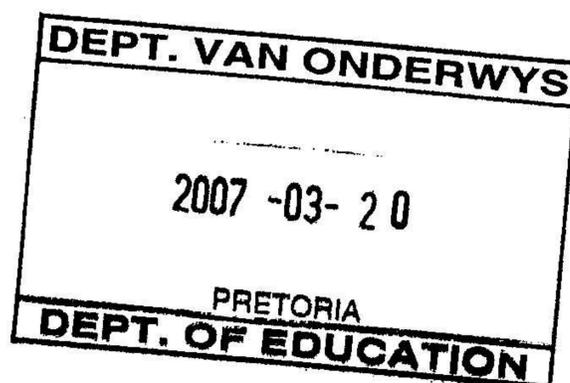


Vraag 4**4.1 Diagram van die blom**

- 4.1.1
- A. Stuifmeelkorrel ✓ (1)
 - B. Manlike gamete ✓ (1)
 - C. Vegetatiewe kern ✓ (1)
 - D. Integument ✓ (1)
 - F. Ovum/Eiersel ✓ (1)
 - I. Kiemsak ✓ (1)
 - K. Naelstring ✓ (1)
- 4.1.2 **B. Manlike Gamete**
- Verbind met beide die ovum en kiemwitsel. ✓ (1)
- C. Vegetatiewe kern**
- Beheer die groeirigting van die stuifmeelbuis. ✓ (1)
- 4.1.3 **E. Hulpsele**
- Hulle word afgebreek wanneer die stuifmeelbuis in die kiemsak groei. ✓ (1)
- H. Kiemwit (Endosperm)**
- Dit vorm weefsel wat dien as voedsel vir die ontkiemende embrio (saadjie). ✓ (1)
- 4.1.4
- Die stuifmeelbuis word gevorm en groei na die saadknop. ✓ (1)
 - Die groeirigting word beheer deur die vegetatiewe kern. ✓ (1)
 - Een manlike gameet versmelt met die ovum om 'n sigoot te vorm. ✓ (1)
 - Die ander manlike gameet versmelt met die kiemwitsel ✓ (1)
 - Die kiemwit vorm die voedsel vir die ontwikkelende embrio. ✓ (1)

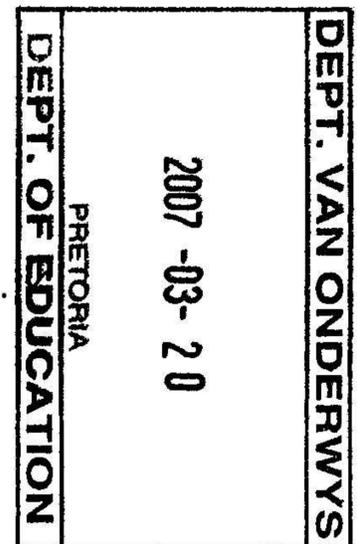
- 4.2 **Stimulatiewe partenokarpie**
- Dit is die ontwikkeling en groei van 'n vrug (vrugset) ✓ met bestuiwing as stimulus maar sonder dat bevrugting plaasvind. ✓ bv. Korrente ✓ (3)
- 4.3
- Helder kroonblare, geur en nektar lok insekte. ✓ (1)
 - Insekte versprei stuifmeel na ander blomme. ✓ (1)
 - Bestuiwing en bevrugting vind plaas in die blom. ✓ (1)
 - Blomme verskaf nektar vir die produksie van heuning. ✓ (1)
 - Stuifmeel word ook gebruik vir die sintese van was. ✓ (1)
- 4.4 **Vrugontwikkeling**
- 4.4.1 'n Byvrug
- Dit ontwikkel van die rypgeworde vrugbeginsel sowel as ander ontwikkelende strukture van die blom. ✓✓ (2)
- 4.4.2 **Veelvoudige vrugte**
- Dit ontwikkel vanaf 'n blom met 'n groot aantal enkelvoudige stampers op dieselfde blombodem (elk van die stampers se vrugbeginsels ontwikkel) om 'n enkele vrug te vorm. ✓✓ (2)
- 4.4.3 **Saamgestelde vrugte**
- Dit ontstaan uit 'n bloeiwyse waar elke blom sy eie vrugbeginsel en saad. ✓ Die blomme ontwikkel en druk teen mekaar om 'n enkele saamgestelde vrug te vorm. ✓ (2)
- 4.5
- Tongenting ✓ (1)
 - Masjienenting ✓ (1)
 - Kloofenting ✓ (1)
- 4.6
- Vrugvorming is die vergroting (swel) van die vrugbeginsel en blomsteel ✓ na die kroonblare afgeval het. ✓ (2)

[35]



Vraag 5**5.1 Water absorpsie deur plante**

- 5.1.1 A. Water Absorpsie / Voedingstofopname ✓ (1)
- B. Wortelgroei en waterabsorpsie / selverlenging / differensiasie. ✓ (1)
- C. Beskerm die wortelpunt / groei / seldeling ✓ (1)
- 5.1.2 - Osmose ✓ (1)
- 5.1.3 - Water word gebruik om voedingstowwe te vervoer. ✓ (1)
- Afkoeling van die plant. ✓ (1)
- Gee vorm aan die plant (turgor). ✓ (1)
- Dien as oplosmiddel. ✓ (1)
- Belangrik vir chemiese reaksies soos fotosintese. (1)

**5.2 Groenbemesting**

- 5.2.1 Humus. ✓ (1)
- 5.2.2 Peulplante / Eenjarige gewasse. ✓ (1)
- 5.2.3 Hulle beskik oor die vermoë om lugstikstof te bind / Mutualisme. ✓ (1)
- 5.2.4 - Groenbemesting verbeter die grondstruktuur. ✓ (1)
- Verhoog die stikstofinhoud. ✓ (1)
- Dit verminder water en voedingstofverliese uit die grond. ✓ (1)
- Dit verhoog die organiese materiaalinhoud van die grond. ✓ (1)
- Dit voorkom grondverspoeling en gronderosie. ✓ (1)

- 5.3 - Elke geval het optimum tyd vir die neem van plantmonsters. ✓ (1)
- Die beste tyd vir die neem van plantmonsters is vanaf Desember tot Februarie. ✓ (1)
- Noem 'n monster van 10 tot 20 jong, volwasse en gesonde blare uit die sentrale gedeelte van die plant wat verteenwoordigend is van die gewas. ✓ (1)
- Die monster word omtrent skouerhoogte by bome geneem. ✓ (1)

- Pluk die monsters voor 10h00. ✓ (1)

- Moet hulle nie was nie. ✓ (1)

- Sit hulle in 'n skoon plastiëksakkie en versend na die laboratorium ✓ (1)

5.4.3 - Dien 1 – 3 ton gips per hektaat toe. ✓ (1)

- Die kalsium van die kalsiumsulfaat verplaas die natrium ione. ✓ (1)

- Die natrium reageer met die sulfaat om natriumsulfaat te vorm. ✓ (1)

- Natriumsulfaat sal maklik uitgeloog word omdat dit baie oplosbaar is. ✓ (1)

- Die loging kan aangehelp word met swaar besproeiings. ✓ (1)

5.5 Splitsing van die watermolekuul

- Energie verhoog van molekule in chlorofil na fotone van lig geabsorbeer is. ✓ (1)

- Die energie word gebruik om die watermolekuul in waterstof en suurstof op te breek. ✓ (1)

- Die suurstof word aan die atmosfeer vrygestel. ✓ (1)

- Waterstof word gebruik vir die sintese van koolhidrate. ✓ (enige 3) (1)

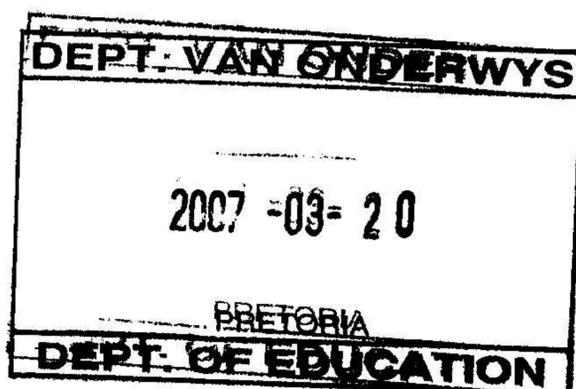
5.6 Breedwerpige bemesting

- Dit is eweredige verspreiding van bemesting oor 'n bewerkte area ✓ gewoonlik voor of tydens die plantproses. ✓ (2)

5.7 Kalk toediening

Wanneer - Voor die reënseisoen / voor planttyd. ✓ (1)

Hoe - eweredig versprei oor oppervlakte en / in gewerk in grond deur ploegaksie ✓ (1)



5.8 Tipes kalk

- Kalsitiese landboukalk ✓ - 15% $MgCO_3$ ✓ (2)
 - 70% $CaCO_3$ ✓ (1)
 - Dolomitiese landboukalk ✓ - 20% $MgCO_3$ ✓ (2)
 - 80% $CaCO_3$ ✓ (1)
- (6)**

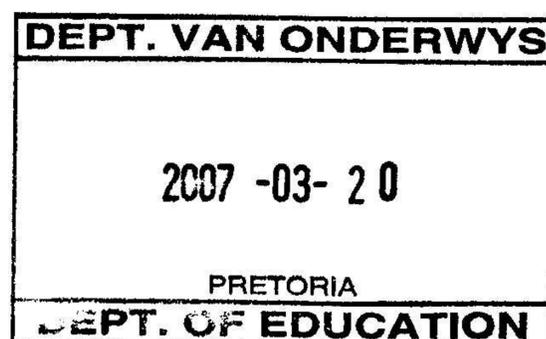
5.9 Bemesting vir blaartoediening

- Boraks ✓ (1)
- Natrium molibdaat ✓ (1)
- Ureum ✓ (1)
- Ammoniumsulfaat ✓ (1)
- Kaliumsulfaat ✓ (1)
- Koperchloried ✓ (1)
- Mangaansulfaat ✓ (1)
- Ysterchelaat ✓ (1)

(enige 2 x 1 = 2)

[45]

Totaal Afdeling B = 150
Groottotaal = 200



SECTION A: QUESTION 1

- 1.1 1.1.1 B✓✓
- 1.1.2 C✓✓
- 1.1.3 C✓✓
- 1.1.4 C✓✓
- 1.1.5 C✓✓
- 1.1.6 C✓✓
- 1.1.7 D✓✓
- 1.1.8 A✓✓
- 1.1.9 C✓✓
- 1.1.10 B✓✓ (20)
- 1.2 1.2.1 E✓✓
- 1.2.2 D✓✓
- 1.2.3 B✓✓
- 1.2.4 F✓✓
- 1.2.5 G✓✓ (10)
- 1.3 1.3.1 O-horizon✓✓
- 1.3.2 Clay✓✓
- 1.3.3 Humus✓✓
- 1.3.4 Mitosis✓✓
- 1.3.5 Broadcasting✓✓ (10)
- 1.4 1.4.1 Deflocculation✓✓
- 1.4.2 Green manuring✓✓
- 1.4.3 Hydrolysis✓✓
- 1.4.4 Adsorbed✓✓
- 1.4.5 The O-horizon✓✓ (10)

| |
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|---|

Total Section A: 50

Section B:

Question 2

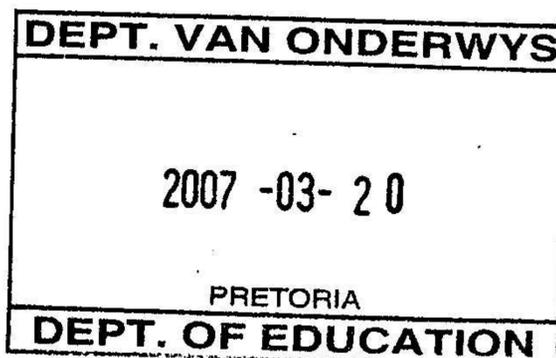
- 2.1.2 Evaporation / Transpiration✓ (1)
- 2.1.3 Transpiration✓ (1)
- 2.1.4 Run-off / Percolation / Evaporation✓ (1)
- 2.1.5 Evaporation / Run-off / Percolation✓ (1)
- 2.1.6 Transpiration✓ (1)

2.2

| | | Clay soil | Sandy soil |
|-------|-----------------|---|--|
| 2.2.1 | Tillability | Cultivation is difficult (1) ✓ Soil is sticky (1) ✓ (Any 1) | Easy to cultivate(1) ✓ not so sticky (1) ✓ (Any 1) |
| 2.2.2 | Water retention | Keep more water for a longer time (1) ✓ | Keeps less water for a short time(1) ✓ |
| 2.2.3 | Aeration | Weak aeration - more micro-pores (1) ✓ | Better aeration - many macro-pores (1) ✓ |

(6)

- 2.3 2.3.1 Soil pore space is the space that exists between soil particles or the total volume of the macro and the micro pores in the soil.✓✓ (2)
- 2.3.2 - The larger the particle size the greater the volume of pore space. ✓ (1)
 - Smaller particle sizes have smaller spaces in between. ✓ (1)
 - Larger particle sizes have more spaces in between. ✓ (1)
- 2.4 2.4.1 **Soil texture**
 - Water retention is high in soils with finer texture. ✓ (1)
 - Clay and loam soils have more micro pores and hold more water. ✓ (1)
 - Sandy soil has more macro pores and retains less water. ✓ (1)



2.4.2 Organic matter content

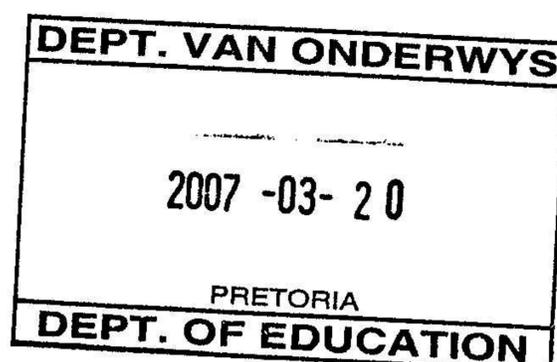
- Water holding capacity of soil increases with an increase in its organic matter content. ✓ (1)
- Like a sponge organic matter has the ability to retain water. ✓ (1)
- Organic matter will improve soil structure. ✓ (1)
- Soil structure will determine the quantity of micro pores and water retention ✓ (any 2) (1)

- 2.5
- Infiltration rate ✓ (1)
 - Water storage ✓ (1)
 - Aeration ✓ (1)
 - Drainage ✓ (1)
 - Plant nutrients ✓ (any 3) (1)

- 2.6
- 2.6.1
- Dominant texture at point A is **clay**. ✓ (1)
 - Dominant texture at point C is **silt loam**. ✓ (1)
- 2.6.2
- At point A: % clay is 70 ✓ (1)
- % silt is 10 ✓ (1)
- % sand is 20 ✓ (1)
- At point B: % clay is 20 ✓ (1)
- % silt is 40 ✓ (1)
- % sand is 40 ✓ (1)

- 2.7
- Positive** on the Hydrogen side ✓ (1)
- Negative** on the Oxygen side ✓ (1)

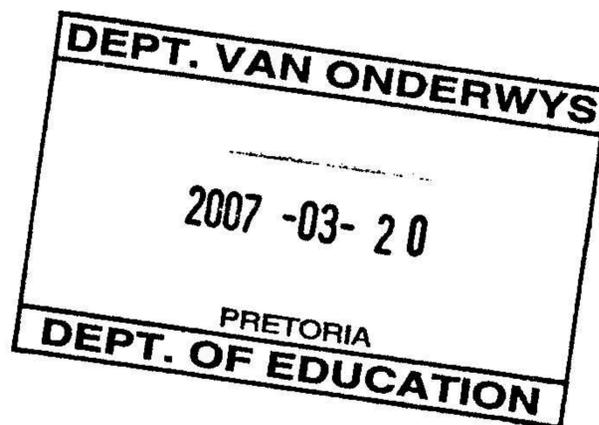
[35]



Question 3

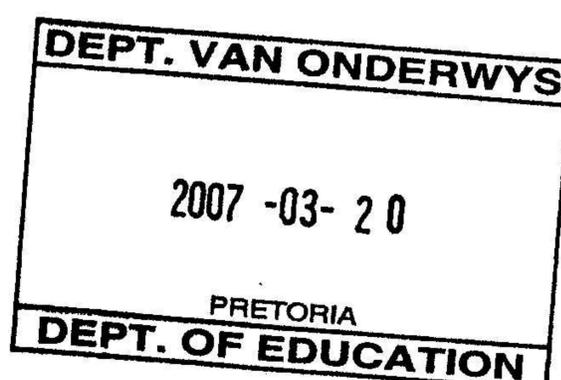
- 3.1 - Oxidation – is the chemical process whereby oxygen combines with minerals✓ in order to form a new product✓ (2)
- Reduction – it takes place under low oxygen concentration in wet conditions.✓ (1)
- electrons are gained and reduced elements become negative. ✓ (1)
- 3.2 3.2.1 **Frost damage**
- When soil temperature is very low (winter) heavy frost may occur. ✓ (1)
- Occurrence of frost during sensitive period of crops may cause damage. ✓ (1)
- Frost sensitive crops should be planted on the northern slope. ✓ (1)
- Southern slopes are more susceptible to frost. ✓ Any 2) (1)
- 3.2.2 **Evaporation and transpiration**
- More water is lost through transpiration and evaporation when soil temperature is high.✓✓ (2)
- Less water is lost through transpiration and evaporation when soil temperature is low.✓✓ (any 1) (2)
- 3.2.3 **Early crops**
- For early crops, a warm sandy soil on a northern slope should be chosen✓ to hasten ripening of crops. ✓ (2)
- 3.3 Charge density✓ (1)
- This is the amount of charge per unit surface area. ✓ (1)
- The available surface area will determine the amount of cations that will be adsorbed. ✓ (1)
- Cation charge✓ (1)
- Monovalent cations (K^+ , Na^+) will be less strongly adsorbed. ✓ (1)
- Bivalent cations (Mg^{++} , Ca^{++}) will be more strongly adsorbed. ✓ (1)
- Cation size✓ (1)
- Hydrated cations are more important than the size of the cations. ✓ (1)

- Water molecules arrange themselves around the cations. ✓ (1)
 determination of the soil fertility and soil series. ✓ (2)
- 3.5 - Illite ✓ (1)
 - Vermiculite ✓ (1)
 - Montmorillonite ✓ (1)
 - Kaolinite ✓ (any 3) (1)
- 3.6 - Calcium ✓ (1)
 - Magnesium ✓ (1)
 - Potassium ✓ (1)
 - Sodium ✓ (1)
- 3.7 - Soil provides a place to anchor plant roots. ✓ (1)
 - Soil provides oxygen to the roots. ✓ (1)
 - Soil provides plant nutrients. ✓ (1)
 - Soil serves as buffer against large temperature variations. ✓ (1)
 - Soil provides plants with water ✓ (1)
- 3.8 **Cation Exchange Capacity**
- This is the amount of charge on clay ✓ per unit weight of soil. ✓ OR
 measurement of the ability of colloids ✓ in the soil to adsorb cations. ✓ (2)

[35]

Question 4**4.1 Diagram of flower**

- 4.1.1 A. Pollen grain✓ (1)
- B. Male gametes✓ (1)
- C. Vegetative nucleus✓ (1)
- D. Integument✓ (1)
- F. Ovum/Egg cell✓ (1)
- I. Germ sac✓ (1)
- K. Umbilicus✓ (1)
- 4.1.2 **B. Male Gametes**
- Combine with both egg cell and endosperm cell. ✓ (1)
- C. Vegetative nucleus**
- Controls growth direction of the pollen tube. ✓ (1)
- 4.1.3 **E. Auxiliary cells**
- These get destroyed when pollen tube grows into the germ. ✓ (1)
- H. Endosperm**
- It forms tissue that provides food for the germinating embryo. ✓ (1)
- 4.1.4 - The pollen tube is formed and grows towards the ovule. ✓ (1)
- It is controlled by the vegetative nucleus. ✓ (1)
- One male gamete fuses with an ovum to form a zygote✓. (1)
- Another male gamete fuses with the endosperm cell✓ (1)
- The endosperm tissue is food for the developing embryo. ✓ (1)



4.2 Stimulative parthenocarpy

- It is the setting of fruit and further development ✓ thereof with pollination as stimulus but without fertilisation. ✓ e.g. Currants ✓ (3)

4.3 - Brightly coloured petals, smells and nectar attract insects ✓. (1)

- Insects bring pollen grains to the flowers ✓. (1)

- Pollination and fertilisation take place in a flower. ✓ (1)

- Flowers provide nectar for the production of honey. ✓ (1)

- Pollen is also used for the production of wax. ✓ (1)

4.4 Fruit development

4.4.1 An accessory fruit

- It develops from the ripened ovary as well as from other developed structures of the flower. ✓✓ (2)

4.4.2 A multiple fruit

- It develops from flower containing a large number of pistils on the same receptacle each developing into independent fruit. ✓✓ (2)

4.4.3 Compound fruit

- It forms from an inflorescence where each flower has its own ovary and seed. ✓ Flowers press against one another to form single compound fruit. ✓ (2)

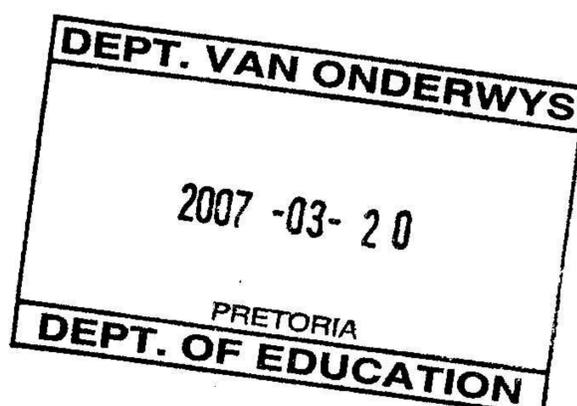
4.5 - Tongue grafting ✓ (1)

- Machine grafting ✓ (1)

- Split grafting ✓ (1)

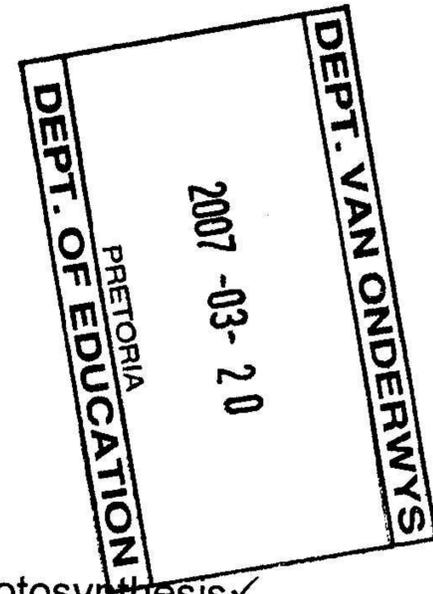
4.6 - Fruit setting is swelling of the ovary and pedicel ✓ after petals have fallen. ✓ (2)

[35]



Question 5**5.1 Water absorption by plants**

- 5.1.1 A. Water Absorption / Nutrients absorption ✓ (1)
- B. Root growth and water absorption / Cell elongation / differentiation. ✓ (1)
- C. Protects root tip / growth / cell division ✓ (1)
- 5.1.2 - Osmosis ✓ (1)
- 5.1.3 - Water is used to transport nutrients. ✓ (1)
- It cools the plant. ✓ (1)
- It maintains the structure of the plant. ✓ (1)
- It acts as a solvent. ✓ (1)
- It is important for chemical reactions like photosynthesis ✓. (1)

**5.2 Green manuring**

- 5.2.1 Humus. ✓ (1)
- 5.2.2 Legumes / Pod-bearing plants / Annual crops ✓. (1)
- 5.2.3 They are capable of fixing nitrogen from the atmosphere / Mutualism. ✓ (1)
- 5.2.4 - Green manuring improves soil structure. ✓ (1)
- Increases the nitrogen content. ✓ (1)
- It reduces water and nutrient loss from the soil. ✓ (1)
- It increases organic matter content. ✓ (1)
- It prevents soil erosion. ✓ (1)

- 5.3 - Each crop has an optimal time to take leaf samples. ✓ (1)
- The best time to take leaf samples is from December to February. ✓ (1)
- Sample 10 to 20 young, mature, healthy and central leaves from the representative crop. ✓ (1)
- The leaves are selected from trees at about shoulder heights. ✓ (1)

- Pick the leaves before 10h00. ✓ (1)
- Do not wash them. ✓ (1)
- Put them in clean plastic bag and dispatch to laboratory. ✓ (1)

5.4 Reclamation of alkaline soil

- 5.4.1 A = Gypsum ✓ (1)
- 5.4.2 B = Calcium ✓ (1)
- 5.4.3 - Add 1 – 3 tons of gypsum per hectare. ✓ (1)
- The calcium from calcium sulphate replaces the sodium ions. ✓ (1)
- The sodium reacts with sulphate to form sodium sulphate. ✓ (1)
- Sodium sulphate will be leached due to its solubility. ✓ (1)
- Sodium sulphate leaching will be increased by heavy irrigation. ✓ (1)

5.5 Splitting of water molecule

- Energy of the molecule increases after photon absorption by the chlorophyll. ✓ (1)
- The energy is used to split water molecule into oxygen and hydrogen. ✓ (1)
- The oxygen is released into the atmosphere. ✓ (1)
- Hydrogen is used for the synthesis of carbohydrates. ✓ (any 3) (1)

5.6 Broadcasting fertiliser

- It is uniform spreading of the fertiliser over the planted area ✓ usually done before or during planting ✓. (2)

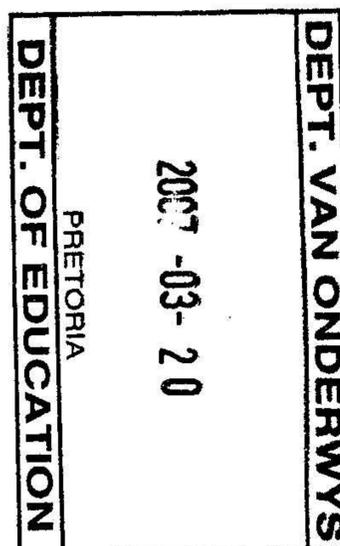
5.7 Lime application

When - Before the rainy season / before planting. ✓ (1)

How - Broadcasting evenly / ploughed into the soil ✓ (1)

Types of lime

- Calcitic agricultural lime ✓ - 15% MgCO₃ ✓ (2)
- 70% CaCO₃ ✓ (1)
- Dolomitic agricultural lime ✓ - 20% MgCO₃ ✓ (2)
- 80% CaCO₃ ✓ (1)



5.9 Fertilisers for foliar application

- Borax ✓ (1)
- Sodium molybdate ✓ (1)
- Urea ✓ (1)
- Ammonium sulphate ✓ (1)
- Potassium sulphate ✓ (1)

[45]

Total Section B = 150
Grand Total = 200

