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

Blaai asseblief om

Afdeling B

Vraag 2

2.1 **Vorms van waterverlies**

2.1.1 Afloop ✓ (1)

2.1.2 Verdamping / Transpirasie ✓ (1)

2.1.3 Transpirasie ✓ ✓ (1)

2.1.4 Afloop / Perkolasie / Verdamping ✓ (1)

2.1.5 Verdamping / Afloop / Perkolasie ✓ (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)
- Dreinering ✓ (1)
- Plant voedingstowwe✓ (1)

(enige 3)

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 versuipte toestande.✓ (1)

- Elektrone word oorgedra en gereduseerde elemente se elektronstruktuur verander. ✓ (1)

3.2 3.2.1 **Rypskade**

Wanneer grondtemperature 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 <u>Ladingsdigtheid</u> ✓ (1)

- Dit is die hoeveelheid lading per eenheidsoppervlakte. ✓ (1)

- Die beskikbare oppervlakarea sal die aantal katione wat geadsorbeer raak bepaal. ✓ (1)

<u>Katioon lading</u> ✓ (1)

- Monovalente katione (K^+, Na^+) sal nie so sterk adsorbeer word nie. ✓ (1)

- Bivalente katione (Mg^{++}, Ca^{++}) sal sterker geadsorbeer word. ✓ (1)

<u>Katioon grootte</u> ✓ (1)

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

(enige 3)

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 **Katioon-uitruilkapasiteit**

- Dit is die grootte van die lading op kleideeltjies ✓ per eenheid gewig van die grond. ✓ OF maatstaf van die vermoeë 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. Hulpselle**

- 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)

Blaai asseblief om

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 yong, volwasse en gesonde blare uit die sentrale gedeelte van die plant wat verteen woordigend 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 plastieksakkie 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 besproeïngs.✓ (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)

Blaai asseblief om

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)

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 - Infiltaration 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 <u>Charge density</u>✓ (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)

<u>Cation charge</u>✓ (1)

Monovalent cations (K^+, Na^+) will be less strongly adsorbed. ✓ (1)

Bivalent cations (Mg^{++}, Ca^{++}) will be more strongly adsorbed. ✓ (1)

<u>Cation size</u>✓ (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 form✓ 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 is 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 form 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% $MgCO_3$ ✓ (2)
  - 70% $CaCO_3$ ✓ (1)
- Dolomitic agricultural lime✓ - 20% $MgCO_3$ ✓ (2)
  - 80% $CaCO_3$ ✓ (1)

(6)

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