

POSSIBLE ANSWERS
FEB / MARCH 2007

BIOLOGY/P2/SG

2

Marking Guideline.

SENIOR CERTIFICATE EXAMINATION – Feb/Mar 2007

SECTION A

QUESTION 1

1.1

1.1.1 C ✓✓

1.1.2 D ✓✓

1.1.3 B ✓✓

1.1.4 C ✓✓

1.1.5 D ✓✓

1.1.6 A ✓✓

1.1.7 B ✓✓

(7 x 2) (14)

1.2

1.2.1 Hormones ✓

1.2.2 Tissue fluid /Intercellular fluid✓

1.2.3 Goitre ✓

1.2.4 Eustachian tube ✓

1.2.5 Radial ✓muscles

1.2.6 Choroid ✓

1.2.7 Loop of Henlé ✓

(7)

1.3

1.3.1 B ✓✓

1.3.2 E ✓✓

1.3.3 G ✓✓

1.3.4 A ✓✓

1.3.5 H ✓✓

1.3.6 C ✓✓

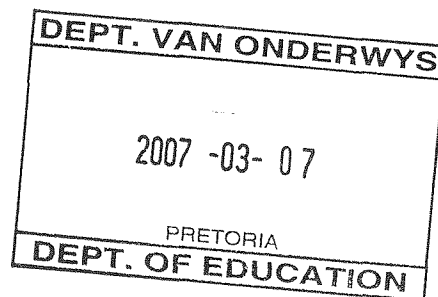
(6 x 2) (12)

1.4

1.4.1 Water loss/ tranpiration/ absorption ✓ (1)

1.4.2 - Make sure the apparatus is air tight✓ to prevent water vapour from escaping✓
 - Insert the twig in water ✓ to prevent air bubbles✓
 -Cut the twig under water✓ to prevent air bubbles✓ (4)
 (Mark first two answers only)

1.4.3 - To move water upwards/ from the roots to the leaves/ for photosynthesis ✓
OR
 - Evaporation of water causes a cooling effect ✓ (1)
 (Mark first answer only) (6)



1.5

- 1.5.1 A - epidermal cell ✓
B - guard cell ✓

(2)

1.5.2

Epidermal cell	Guard cell
Even, thin walls ✓	Thin outer wall and thick inner wall ✓
No chloroplasts ✓	Chloroplasts ✓
Irregular shape ✓	Bean-shaped ✓

(Mark first two answers only)
table ✓

(2 x 2)

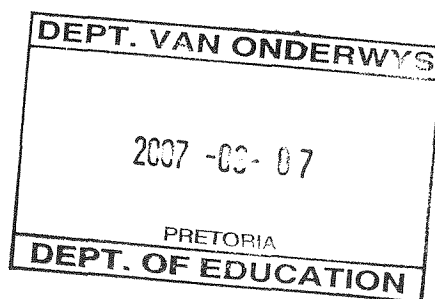
(5)

- 1.5.3 - C – Inner wall ✓ moves further/ closer ✓ depending on vacuole size
- E – Chloroplast ✓ Photosynthesis affects the water potential of the cell /
K⁺ ions concentration influences water potential ✓

(4)

(11)

TOTAL QUESTION 1: 50
TOTAL SECTION A: 50



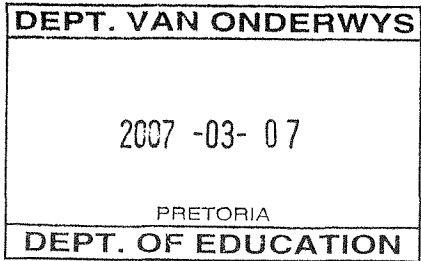
QUESTION 2

2.1

- 2.1.1 - B ✓ (1)
 - 2.1.2 - C ✓ (1)
 - 2.1.3 - D ✓ (1)
 - 2.1.4 - A ✓ (1)
 - 2.1.5 - Receptor receives stimulus/ stimulus converted to an impulse ✓ (1)
 - 2.1.6 - Impulse conducted by sensory neuron / along dorsal root to spinal cord ✓ (1)
 - 2.1.7 - Impulse directed by motor neuron from the central nervous system / along ventral root ✓ (1)
 - 2.1.8 - Muscles / effector contract / hand pulled away from damaging fire ✓ (1)
 - 2.1.9 Synapse ✓ (1)
 - 2.1.10 Heat ✓
Pain ✓ (1)
- (Mark first answer only) (2)**
(11)

2.2

- 2.2.1 A - Semi- circular canal ✓
B - Utriculus ✓
C - Sacculus ✓ (3)
- 2.2.2 Endolymph / perilymph ✓ (1)
- 2.2.3 - The perilymph ✓
prevents friction / and absorb shocks ✓
- The bone / situated deep inside the skull ✓
protect structures against physical damage ✓
(Mark first two answers only) 2 x 2 (4)
- 2.2.4 A - Register movement of the head / speed and direction ✓
B - Respond to pull of gravity / position of head ✓ (2)
- 2.2.5 - Photoreceptors ✓
- Proprioceptors ✓
(Mark first two answers only) (2)
(12)
- 2.3 - The sense of smell ✓
- is strongest / acute at birth ✓ and decreases as one gets older (2)



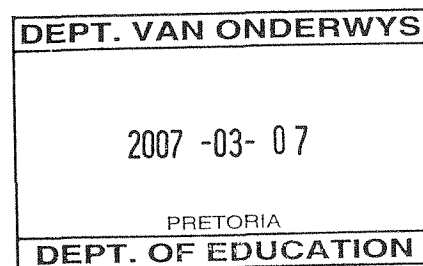
TOTAL QUESTION 2: 25

QUESTION3**3.1**

- 3.1.1 Wrap baby in blanket / put on more clothes ✓ (1)
- 3.1.2 - Baby has larger surface ✓
 - area to volume ratio ✓
 - through which heat gets lost ✓ (3)
(4)

3.2

- 3.2.1 C ✓ (1)
- 3.2.2 -To respond to an emergency
 - blood is redirected ✓ to
 - where it is needed ✓ from skin
 - to bring more food ✓
 - and oxygen ✓
 - for respiration ✓
 - to release energy to respond ✓ (Any 2) (2)
- 3.2.3 (a) A ✓ (1)
- (b) C/ B ✓ (1)
- 3.2.4 A ✓ (1)
- 3.2.5 - Blood capillaries dilate ✓
 -to bring more blood with fluids ✓
 - that can use body heat ✓
 -to bring about evaporation ✓
 - to lower body temperature ✓ (Any 4) (4)
(10)

**3.3**

- 3.3.1 Hypophysis/Pituitary ✓ (1)
- 3.3.2 - Has no duct ✓
 - to transport secretion/hormone away ✓
OR
 - Secretion transported ✓ away from gland
 - by blood ✓ (2)
- 3.3.3 At the base of the brain/ in the head ✓ (1)

- 3.3.4 - Bones ✓
-Muscles ✓ (Mark first two answers only) (2)
- 3.3.5 - Growth of flat bones (skull) does not stop ✓
- while those of long bones stops ✓ (2)
- 3.3.6 Yes ✓ (1)
- 3.3.7 - Medication with a high GH concentration ✓
- Will promote lengthening of long bones ✓ (2)
- (11)**

TOTAL QUESTION 3: 25

QUESTION 4

4.1

- 4.1.1 - Removal ✓ of harmful substances / metabolic waste ✓
from the body (2)

- 4.1.2 - Regulating ✓ a constant water content / osmotic pressure / salt content ✓
in the body (2)

OR

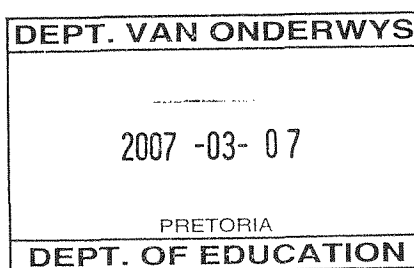
- Controls the amount of water ✓
- entering / leaving the cells ✓ **(4)**

- 4.2.1 - Blood sample has proteins whereas sample 1 does not have them ✓ (1)

- 4.2.2 - Proteins too large ✓
- to filter into Bowman's capsule ✓ (2)

- 4.2.3 $2,0 - 0,05 \checkmark = 1,95 \checkmark \text{ g/100cm}^3 \checkmark$ (3)

- 4.2.4 - Dye reabsorbed ✓
- into blood capillaries ✓
- then secreted ✓
- back into renal tubes ✓ (3)



(Any 3) (3)

- 4.2.5 - Cells inside contain microvilli ✓
tube is highly folded /long ✓
increasing the surface area ✓
- Many mitochondria present ✓
which release ATP ✓
to supply the energy ✓ (Any 2) (2 x 2) (4)
- (13)**

- 4.3.1 2 ✓ ml/min ✓ (2)
- 4.3.2 Decrease ✓ (1)
- 4.3.3 - On a hot day the body loses more water by sweating ✓
 - ADH is secreted ✓
 - by the hypophysis ✓
 - to make the collecting tubules ✓
 - more permeable to water ✓
 - water is conserved by the body/ less urine produced ✓
 - hence concentrated / more yellow urine is secreted ✓ (Any 5) (5)

TOTAL QUESTION 4: 25

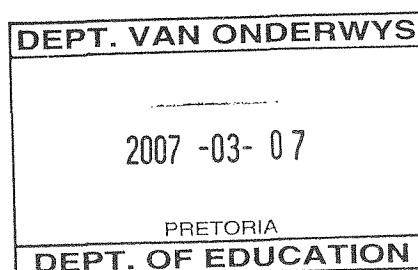
QUESTION 5

5.1

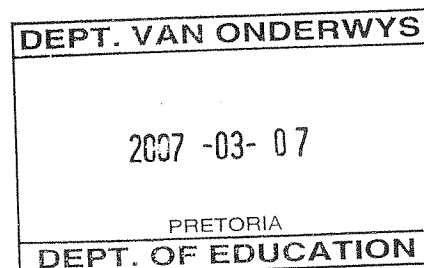
- 5.1.1 To demonstrate root pressure ✓ (1)
- 5.1.2 - To exclude the suction force ✓ of transpiration ✓
OR
 - since transpiration mainly ✓
 takes place through the leaves (Mark first answer only) (2)
- 5.1.3 - Prevention of evaporation from glass tube / cover water with paraffin / oil ✓ (1)
(Mark first answer only)
- 5.1.4 - water diffuses from the soil/ by osmosis ✓
 - through the root tissue ✓
 - into the root xylem / stem ✓ (3)
- 5.1.5 - Root pressure causes exudation of water droplets ✓
 - through the hydathodes / openings on leaf margins ✓
 - at night ✓
 - when the air is humid ✓
 - and stomata are closed ✓ (Any 4) (4)
- 5.1.6 - High humidity ✓
 - high soil water content ✓
 - low temperature ✓
 - closed stomata ✓ (Mark first two answers only) (2)
(13)

5.2

- 5.2.1 00:00 ✓ and 03:00 ✓ (2)



- 5.2.2 - Water intake increases / decreases ✓
- as transpiration increases / decreases ✓
OR
- An increase / decrease in the one ✓
- leads to an increase / decrease in the other ✓ (correct sequence) (2)
- 5.2.3 - There is a decrease in the rate of water intake ✓ because
- Light intensity is decreasing ✓
- Less sugars formed/ rate of photosynthesis decreased ✓
- Water potential in guard cells increased ✓
- less endosmosis taking place ✓
- Turgidity of guard cells decreased ✓
- Stomatal pore size smaller / starting to close ✓
- Smaller suction force of transpiration ✓ (Any 5) (5)
- 5.2.4 - root system/ root hairs ✓ (1)
- 5.2.5 -Takes place through the lenticels ✓
- that always remain open ✓
OR
- Still takes place through stomata ✓
- because they do not close completely ✓ (2)
(12)
- TOTAL QUESTION 5: 25**
TOTAL SECTION B: (100)
GRAND TOTAL: 150



AFDELING A**VRAAG 1****1.1**

1.1.1 C ✓✓

1.1.2 D ✓✓

1.1.3 B ✓✓

1.1.4 C ✓✓

1.1.5 D ✓✓

1.1.6 A ✓✓

1.1.7 B ✓✓

(7 x 2) (14)

1.2

1.2.1 Hormone ✓

1.2.2 Weefselvloeistof ✓

1.2.3 Goiter ✓

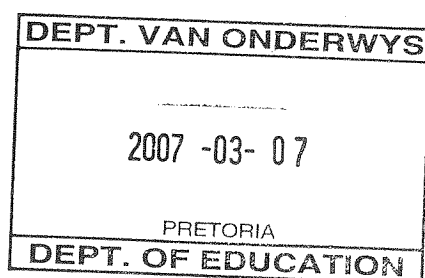
1.2.4 Buis van Eustachias ✓

1.2.5 Radiale ✓spiere

1.2.6 Choroied ✓

1.2.7 Boog / Lus van Henlé ✓

(7)



1.3

1.3.1 B ✓✓

1.3.2 E ✓✓

1.3.3 G ✓✓

1.3.4 A ✓✓

1.3.5 H ✓✓

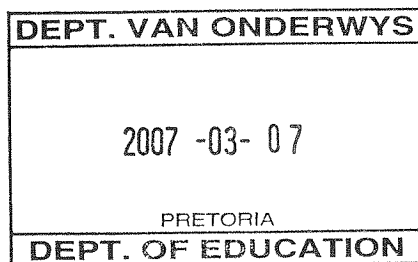
1.3.6 C ✓✓(6 x 2) (12)

1.4

1.4.1 Water verlies / transpirasie / absorpsie ✓ (1)

1.4.2 - Maak seker die apparaat is lugdig✓ voorkom dat waterdamp ontsnap ✓
 - Plaas die takkie onder water ✓ om lugblasies te voorkom✓
 -Sny takkie onder water af✓ om lugblasies te voorkom✓
 (**Merk slegs eerste twee antwoorde**) (4)

1.4.3 - Water opwaarts te vervoer /vanaf die wortels na die blare/vir fotosintese ✓
OF
 - Verdamping van water veroorsaak afkoeling ✓ (1)
 (Merk slegs eerste antwoord) (6)



1.5

- 1.5.1 A - epidermale sel ✓
B - sluitsel ✓ (2)

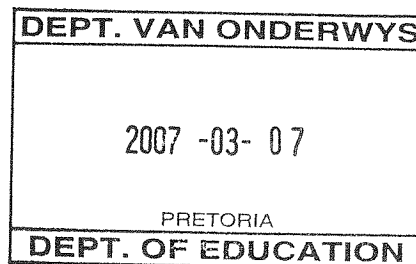
1.5.2

Epidermale sel	Sluitsel
Eweredige dun selwande ✓	Dun buite wand en dik binne wand ✓
Geen chloroplaste ✓	Chloroplaste ✓
Onreelmatige vorm ✓	Boontjie vormig ✓

(Merk slegs eerst twee antwoorde (2 x 2) tabel ✓ (5)

- 1.5.3 - C – Binne wand ✓ beweeg verder / nader ✓afhangend van vakuool grootte
- E – Chloroplaste✓Fotosintese beïnvloed die waterpotensiaal / K⁺ ione konsentrasie beïnvloed die waterpotensiaal ✓ (4)
(11)

TOTAAL VRAAG 1: 50
TOTAAL AFDELING A: 50



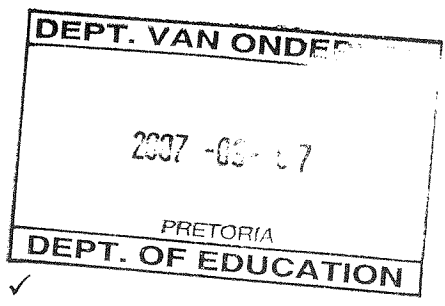
VRAAG 2

2.1

- 2.1.1 - B ✓ (1)
 - 2.1.2 - C ✓ (1)
 - 2.1.3 - D ✓ (1)
 - 2.1.4 - A ✓ (1)
 - 2.1.5 - Reseptors ontvang stimulus / stimulus omskep tot 'n impuls ✓ (1)
 - 2.1.6 - Impuls deur sensoriese neuron gelei / langs dorsale wortel na rugmurg ✓ (1)
 - 2.1.7 - Impulse gestuur deur motoriese neuron vanaf sentrale sensuweestelsel / langs die ventrale wortel ✓ (1)
 - 2.1.8 - Spiere/ effektors trek saam / hand word weggeruk vanaf vuur ✓ (1)
 - 2.1.9 Sinaps ✓ (1)
 - 2.1.10 Hitte ✓
 Pyn ✓ (2)
- (Merk slegs eerste twee antwoorde) (2)**
- (11)**

2.2

- 2.2.1 A - Halfsirkelvormige kanale ✓
 B - Utrikulus ✓
 C - Sakkulus ✓ (3)
- 2.2.2 Endolimf / perilimf ✓ (1)
- 2.2.3 - Die perilimf ✓
 voorkom wrywing / en absorbeer skokke ✓
 - Die been / wat diep in die skedel gelee is ✓
 beskerm die strukture teen fisiese beserings ✓
(Merk slegs eerste twee antwoorde) 2 x 2 (4)
- 2.2.4 A - Registreer beweging van die kop / spoed en rigting ✓
 B - Reageer op gravitasie aantrekking / posisie van die kop ✓ (2)
- 2.2.5 - Fotoreseptors ✓
 - Proprioseptors ✓ **(Merk slegs eerste twee antwoorde) (2)**
(12)
- 2.3 - Die waarneming van smaak ✓
 - is sterkste / skerpste met geboorte ✓ en neem af soos persoon ouer raak (2)



TOTAAL VRAAG 2: 25

VRAAG 3

3.1

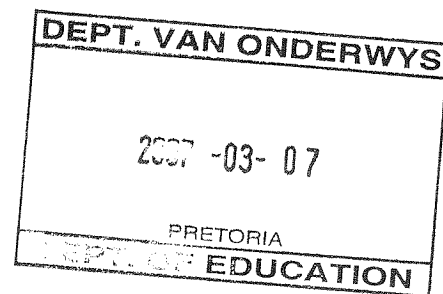
- 3.1.1 Draai baba in kombes toe / trek meer klere aan ✓ (1)
- 3.1.2 - Baba het 'n groter oppervlak area ✓
 - tot volume verhouding ✓
 - waardeur hitte verloor kan word ✓ (3)
(4)

3.2

- 3.2.1 C ✓ (1)
- 3.2.2 - Om te reageer in nood
 - word meer bloed ✓
 - vervoer na waar dit benodig word / ✓ na willekeurige spiere
 - om meer voedsel ✓
 - en suurstof ✓
 - vir verhoogde respirasie te verskaf ✓
 - en meer energie word vrygestel ✓ (Enige 2) (2)
- 3.2.3 (a) A ✓ (1)
 (b) B / C ✓ (1)
- 3.2.4 A ✓ (1)
- 3.2.5 - Bloed kapilleres verwyd ✓
 - om meer bloed met vloeistowwe te verskaf ✓
 - wat liggaams hitte kan gebruik ✓
 - sodat verdamping plaas kan vind ✓
 - om liggaams temperatuur te verlaag ✓ (Enige 4) (4)
(10)

3.3

- 3.3.1 Hipofise ✓ (1)
- 3.3.2 - Het geen buis ✓
 - om sekresie/hormone weg te vervoer nie ✓
OF
 - Sekresie word weg vanaf klier vervoer ✓
 - deur die bloed ✓ (2)
- 3.3.3 Aan die basis van die brein / in die kop ✓ (1)



- 3.3.4 - Bone ✓
 - Spiere ✓ (Merk slegs eerste twee antwoorde) (2)
- 3.3.5 - Groei van platbene (skedel) stop nie ✓
 - terwyl die groei van langbene stop ✓ (2)
- 3.3.6 Ja ✓ (1)
- 3.3.7 - Medikasie met 'n hoë konsentrasie GH ✓
 - sal verlenging van die langbene bevorder ✓ (2)
(11)

TOTAAL VRAAG 3: 25

VRAAG 4

4.1

- 4.1.1 - Verwydering ✓ van skadelike stowwe / metaboliese afval ✓
 uit die liggaam (2)

- 4.1.2 - Regulering ✓ van 'n konstante water inhoud/ osmotiese druk/ sout inhoud ✓
 in die liggaam (2)

OF

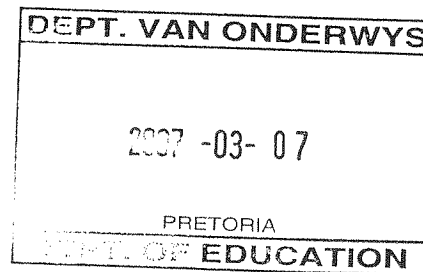
- Beheer die hoeveelheid water ✓
 - wat selle binnegaan / verlaat ✓ **(4)**

- 4.2.1 - Die bloed monsters bevat proteïene, monster 1 bevat geen proteïene ✓ (1)

- 4.2.2 - Proteïene is te groot ✓
 - om deur kapsel van Bowmans te filtreer ✓ (2)

- 4.2.3 $2,0 - 0,05 \checkmark = 1,95 \checkmark \text{ g}/100\text{cm}^3 \checkmark$ (3)

- 4.2.4 - Kleurstof word geherabsorbeer ✓
 - tot in bloed kapilleres ✓
 - dan terug gesekreter ✓
 - tot in nierbuis ✓



(Enige 3) (3)

- 4.2.5 - Die selle binne bevat mikrovilli ✓
 en die buis is baie gevou/lank ✓
 wat oppervlak area vergroot ✓
 - Baie mitochondria teenwoordig ✓
 wat ATP afskei ✓
 om energie te verskaf ✓

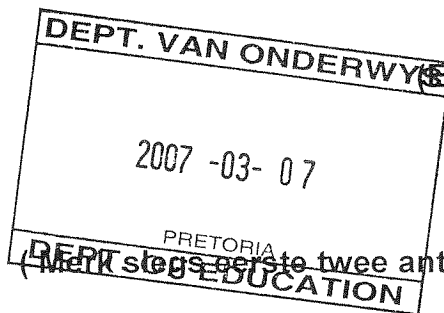
(Enige 2) (2 x 2) (4)
(13)

- 4.3.1 2 ✓ ml/min ✓ (2)
- 4.3.2 Afneem ✓ (1)
- 4.3.3 - Op 'n warm dag verloor die liggaam meer water deur sweet ✓
 - ADH word afgeskei ✓
 - deur die hipofise ✓
 - om die versamelbuis ✓
 - meer deurlaatbaar te maak vir water ✓
 - water word in die liggaam bewaar/ minder uriene geproduseer ✓
 - gevolglik uriene gekonsentreerde / meer geel uriene uitgeskei ✓ (Enige 5) (5)
- (8)**
- TOTAAL VRAAG 4: 25**

VRAAG 5

5.1

- 5.1.1 -Om worteldruk te demonstreer (1)
- 5.1.2 - om die suigkrag van transpirasie ✓ uit te skakel
OF
 - omdat transpirasie hoofsaaklik ✓
 deur die blare plaasvind ✓ **(Merk slegs eerste antwoord)** (2)
- 5.1.3 - Om verdamping uit glasbuis te voorkom/ bedek water met olie/ paraffien ✓
(Merk slegs eerste antwoord) (1)
- 5.1.4 - water diffundeer vanaf grond / deur osmose ✓
 - deur die weefsel van die wortel ✓
 - tot in die xileem van die wortel/ stingel ✓ (3)
- 5.1.5 - Worteldruk veroorsaak die uitdruk van waterdruppels ✓
 - deur die hidatodes / openinge op die blaarrande ✓
 - gedurende die nag ✓
 - wanneer die lug vogtig is ✓
 - en die stomata gesluit is ✓ **(Enig 4)** (4)
- 5.1.6 - Hoë humiditeit ✓
 - Hoë water inhoud in die grond ✓
 - Lae temperatuur ✓
 - Geslote stomata ✓ **(Merk slegs eerste twee antwoorde)** (2)
- (13)**
- 5.2**
- 5.2.1 00:00 ✓ en 03:00 ✓ (2)



- 5.2.2 - Water inname neem toe / af ✓
 - soos transpirasie toeneem / afneem ✓
OF
 - 'n toename / afname in die een ✓
 - lei tot 'n toename / afname in die ander een ✓ (korrekte volgorde) (2)
- 5.2.3 - Daar is 'n afname in die tempo van water inname ✓ omdat
 - die ligintensiteit afneem ✓
 - Minder suikers word gevorm/ fotosintese tempo neem af ✓
 - Waterpotensiaal in sluitselle neem toe ✓
 - Endosmose neem af ✓
 - Turgiditeit van sluitselle neem af ✓
 - Grote van stomata poriee kleiner / begin sluit ✓
 - Kleiner suigkrag van transpirasie ✓ (Enige 5) (5)
- 5.2.4 - wortelstelsel / wortelhare ✓ (1)
- 5.2.5 - Vind deur die lentiselle plaas ✓
 - wat altyd oop is ✓
OF
 - Vind steeds deur die stomata plaas ✓
 - omdat dit nie volledig sluit nie ✓ (2)
 (12)
- TOTAAL VRAAG 5: 25**
TOTAAL AFDELING B: (100)
GROOT TOTAAL: 150

