

1. **If more information than marks allocated is given**  
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right hand margin.
2. **If, for example, three reasons are required and five are given**  
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **If whole process is given when only part of it is required**  
Read all and credit relevant part.
4. **If comparisons are asked for and descriptions are given**  
Accept if differences / similarities are clear.
5. **If tabulation is required but paragraphs are given**  
Candidates will lose marks for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**  
Candidates will lose marks
7. **If flow charts are given instead of descriptions**  
Candidates will lose marks.
8. **If sequence is muddled and links do not make sense**  
Where sequence and links are correct, credit. Where sequence and links is incorrect, do not credit. If sequence and links becomes correct again, resume credit.
9. **Non-recognized abbreviations**  
Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of answer if correct.
10. **Wrong numbering**  
If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.
11. **If language used changes the intended meaning**  
Do not accept.
12. **Spelling errors**  
If recognizable accept provided it does not mean something else in Biology or if it is out of context.
13. **If common names given in terminology**  
Accept provided it is accepted at *this* memo discussion.

14. **If only letter is asked for and only name is given (and vice versa)**  
No credit
15. **If units are not given in measurements**  
Candidates will lose marks. Memorandum will allocate marks for units separately
16. Be sensitive to the **sense of an answer, which may be stated in a different way.**
17. **Caption**  
All illustrations (diagrams, graphs, tables, etc.) must have a caption
18. If you have doubts consult the other language memo, if still have doubts ask the Provincial Internal Moderator to contact the National Internal Moderator or the External Moderators.
19. **Code-switching of official languages (terms and concepts)**  
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.
20. No changes must be made to the marking memoranda without consulting the Provincial Internal Moderator who in turn will consult with the External Moderator/s
21. Only memoranda bearing the signatures of the UMALUSI moderators and distributed by the National Department of Education via the Provinces must be used.

## SECTION A

## QUESTION 1

1.1.1 B✓✓

1.1.2 C✓✓

1.1.3 C✓✓

1.1.4 C✓✓

1.1.5 B✓✓

1.1.6 B✓✓

1.1.7 A✓✓

7 X 2 (14)

1.2.1 Breathing✓/Inhalation and exhalation/ventilation

1.2.2 Anaerobic✓/fermentation

1.2.3 Haemoglobin✓/(oxyhaemoglobin)

1.2.4 Cellulose✓/lignin/pectin

1.2.5 Pyloric✓

5 X 1 (5)

1.3.1 E✓✓

1.3.2 C✓✓

1.3.3 A✓✓

1.3.4 G✓✓

1.3.5 F✓✓

1.3.6 I✓✓

1.3.7 D✓✓

7 x 2 (14)

- 1.4.1 Inhaling✓/inhalation/inspiration/(breathing in) (1)
- 1.4.2 B - lungs✓  
C - diaphragm✓  
D - trachea✓ } **Allocate THREE marks  
irrespective of answers (✓✓✓)** (3)
- 1.4.3 (a) A – bell jar cannot move✓✓/ not flexible or rigid/cannot increase in size or volume like thorax/does not have muscles (2)
- (b) B - balloons are made of rubber✓ therefore no gaseous exchange✓
- OR
- balloons do not fill the cavity in the bell jar✓ therefore small surface area✓
- OR
- lungs fill the whole thoracic cavity✓ therefore have large surface area
- OR
- no alveoli✓ to enlarge surface area✓
- OR
- no blood✓ to transport gases✓
- OR
- no pleura✓ to prevent friction✓
- OR
- no moisture✓ for diffusion of gases✓ (2)
- (c) C - rubber sheet cannot contract or relax on its own✓✓ (2)
- (10)**
- 1.5.1 (a) V – oxygen✓ (1)  
W – starch✓/glucose/sugars/carbohydrates (1)
- (b) T - carbon dioxide✓ (1)  
U - water✓ (1)
- 1.5.2 Soil water✓/capillary water/rain water/any other form of precipitation, e.g. snow (1)
- 1.5.3 Diffusion✓ (1)
- 1.5.4 Mesophyll✓ / Palisade/Spongyparenchyma/Chlorenchyma (1)
- (7)**
- TOTAL SECTION A: 50**

## SECTION B

## QUESTION 2

- 2.1.1 Villus✓ (1)
- 2.1.2 Small intestine✓/any part of the small intestine (1)
- 2.1.3 Columnar✓ epithelium/(goblet cells) (1)
- 2.1.4 Lacteal✓ (1)
- 2.1.5 Blood capillaries✓/blood vessels/capillaries (1)
- 2.1.6 Glucose✓ / monosacharride/any named monosacharride or Amino acids (1)
- 2.1.7 Aminoacids or Glucose/ monosacharride/ any named monosacharride✓ } **Do not accept any answer already accepted in 2.1.6** (1)
- 2.1.8 Lymph✓/lymphatic vessel (1)
- 2.1.9 Fatty acid✓/ glycerol (1)
- 2.1.10 Glycerol✓/ fatty acid } **Do not accept any answer already accepted in 2.1.9** (1)
- (10)**
- 2.2
- The villi✓/ microvilli increase the time/ slows down the food✓ for maximum absorption
  - The numerous villi✓/ microvilli/ increases the surface area✓ for maximum absorption
  - finger-like projections✓ increase the surface area✓ for absorption
  - Presence of lacteal and blood capillaries✓ to transport absorbed nutrients✓
  - The walls of the villus are made up of a single layer✓/ columnar epithelium cells/thin which allows nutrients to pass through easily✓
  - digestive juices✓/ goblet cells / mucus keeps absorption surface moist✓ to facilitate absorption
  - columnar epithelial cells have large number of mitochondria✓ for active absorption✓
- (Mark first THREE only)**
- Any 3 X 2 **(6)**
- 2.3.1
- In test tube I oil will form a layer on top of the water✓/ does not mix /does not dissolve
  - in test tube II oil forms a cloudy✓/white emulsion/mixes/ dissolves in ether
- (2)**

- 2.3.2 (a) To test for the presence of proteins✓  
(b) To test for the presence of glucose/ reducing sugar✓ (2)
- 2.3.3 (a) Wine-red✓ /brick red/violet/pink/purple  
(b) Orange✓/brick red/yellow brown/orange yellow/orange red (2)
- 2.3.4 - Reserve energy source✓  
- Structural component of cell membranes✓  
- Serves as an insulator✓ beneath the skin  
- Protects internal organs✓/shock absorber  
- Plays a role in absorption of vitamins A and D✓  
**(Mark first THREE only)** Any 3 X 1 (3)

(9)

**TOTAL QUESTION: 2 25**

## QUESTION 3

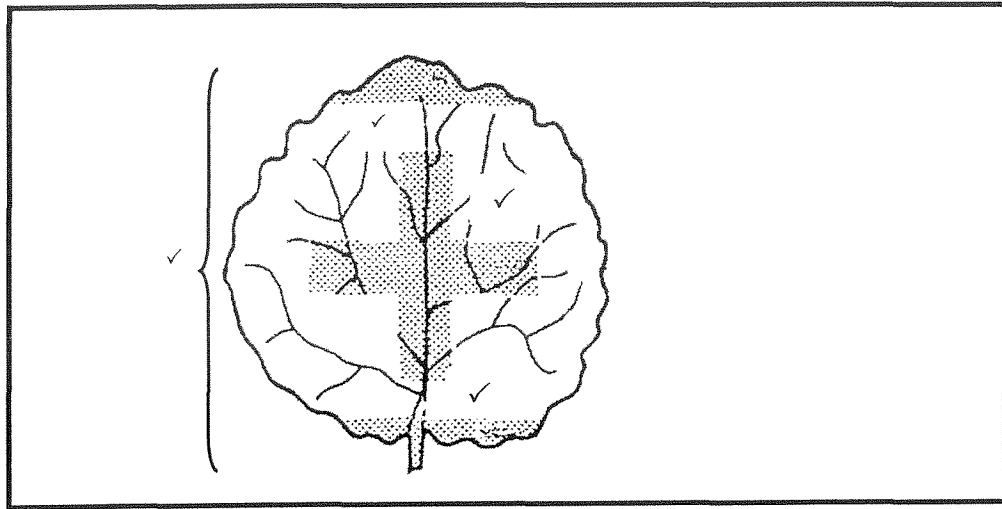
- 3.1.1 (a) - Calcium✓  
- Phosphorus✓  
- Vitamin D✓  
**(Mark first THREE only)** (3)
- (b) - Iron ✓  
- Iodine✓  
**(Mark first TWO only)** (2)
- 3.1.2 - Is a structural component of cell membranes✓  
- For growth / repair of body tissues✓  
- In the production of enzymes and hormones✓  
- Building materials✓ / muscles, Keratin etc.  
- Reserve energy✓  
- Function as antibodies✓ / protection against diseases  
- Form chromosomes✓  
- Component of protoplasm✓  
- Transport✓ e.g haemoglobin  
- (Certain proteins act as buffers)✓  
- Certain proteins assist in clotting of blood ✓ e.g fibrinogen  
**(Mark first THREE only)** Any 3 X 1 (3)
- 3.1.3 (a) Iodine✓ (1)  
(b) Iodine✓ (1)  
(c) Vitamin B<sub>1</sub>✓ / Thiamine (1)
- (11)**
- 3.2.1 Kwashiorkor✓ child lacks protein in diet✓✓ / already shows a symptom swollen belly
- Marasmus✓ does not take in enough food✓✓ / calories / shows symptoms like tiredness
- Scurvy✓ not enough fruits/vegetables✓✓
- Rickets✓ not enough calcium from milk✓✓
- Night blindness✓ not enough vitamin A✓✓
- Beri beri✓ not enough meat / milk✓✓
- Any 2 X 3 (6)
- 3.2.2 carbohydrate✓ (1)
- 3.2.3 3,5 - 4✓ kg✓ (2)
- 3.2.4 10 months - One year old✓ At this stage the loss of weight started✓✓ / curve starts going down (3)
- 3.2.5 (20 - 10)✓ = 10✓ kg (2)

**(14)****Total Question 3:****(25)**

## QUESTION 4

- 4.1.1 To investigate whether light✓ is necessary for photosynthesis✓ (2)
- 4.1.2 (a) - To destarch the plant✓✓/ to make sure that the leaves do not contain starch / to use up all the starch present (2)
- (b) - To soften the leaves✓✓/ kill the cells/ break the cell walls and make them permeable to the alcohol and iodine solution (2)
- (c) - To remove the chlorophyll✓✓ (2)

4.1.3



Shape of leaf = 1; Position and shape of shaded parts that tested positive = 3  
***If shading is not given but correct places labeled blue black award max. 2 marks***

- (4)  
(12)
- 4.2.1 It absorbs carbon dioxide✓ (1)
- 4.2.2 (a) Lime water remains clear✓✓ (2)  
 (b) Lime water turns milky✓✓ (2)
- 4.2.3 Lime water in flask D will remain clear.✓  
 since there is no respiration, carbon dioxide will not be released✓✓ (3)  
***[Award 3 marks irrespective of answer (✓✓✓)]***
- 4.2.4 (Cellular) respiration✓ (1)  
(9)



4.3.1 Healthy air sacs/ A has deep folds between alveoli✓  
 Person with emphysema/ B has shallow folds between alveoli/collapse of the alveoli

Healthy air sacs/ A has wider bronchiolus✓/vestibulum  
 Person with emphysema/ B has narrower bronchiolus/vestibulum

A has a greater surface area than B✓ Any 2 X 1 (2)

4.3.2 - Shallow air sacs✓ have less surface area✓ for gaseous exchange

- The amount of air flowing in/and the speed with which the air ✓should flow is suppressed by narrow brochioles✓

Any 1 X 2 (2)

(4)

**TOTAL QUESTION 4: (25)**

## QUESTION 5

- 5.1.1 A - lag phase✓/ establishment phase (1)  
 B - accelerating phase✓ / growth phase/ logarithmic/ exponential/ (1)  
 geometric growth phase (1)  
 E - carrying capacity✓
- 5.1.2 (a) population acclimatizes✓✓  
 individuals locate mating partners✓✓  
 population still immature✓✓  
**(Mark first ONE only)** Any 1 X 2 (2)
- (b) Abundance of resources✓ ✓ /food/ water/ space  
 Birth rate higher than death rate✓ ✓  
 Few limiting factors✓✓/ Low environmental resistance  
**(Mark first ONE only)** Any 1 X 2 (2)
- 5.1.3 census✓/ Counting (1)  
**(Mark first ONE only)**
- 5.1.4 (a) C✓/A (1)  
 (b) D✓ (1)
- 5.1.5 Lack of **space**✓ (1)  
 Lack of **water**✓  
 Increased **predation**✓  
 disease ✓  
 Any **environmental factors** e.g fire, drought etc.  
 Increased **competition**✓  
 Hunting✓/Poaching  
 Emigration✓  
 Mortality✓  
**(Mark first FOUR only)** Any 4 X 1 (4)  
**(14)**
- 5.2.1  $(20 \times 30)✓ / 5✓ = 120✓$  (3)
- 5.3.1 - in contact with contaminated secretions/saliva/nasal secretions✓  
 - in contact with contaminated excretions/faeces✓  
 - surfaces contaminated with secretions or excretions✓  
**(Mark first TWO only)** Any 2 X 1 (2)
- 5.3.2 - fever✓  
 - sore throat✓  
 - eye infections✓  
 - pneumonia✓  
 - respiratory diseases✓  
**(Mark first THREE only)** Any 3 X 1 (3)

- 5.3.3 Density-independent✓ (1)  
An infected bird could fly over an area and drop contaminated  
faeces which can start a disease✓✓/the avian flu disease is not  
dependent on the density of the population (2)
- OR
- Density dependent✓  
Once one bird is infected the disease can easily spread to other  
birds especially if the population is denser✓✓ (8)

**TOTAL QUESTION 5: (25)**  
**GRAND TOTAL: 150**

**POSSIBLE ANSWERS**  
**OCT / NOV 2006**

1. **Indien meer inligting as die puntetoekenning gegee word**  
 Hou op merk nadat die maksimum punte verkry is en trek 'n kronkellyn en dui 'maks' punte in die regterkantse kantlyn aan.
2. **Indien, by voorbeeld drie redes vereis en vyf word gegee.**  
 Merk net die eerste drie ongeag daarvan of almal of sommige korrek / nie korrek is nie.
3. **Indien die hele proses beskryf word terwyl slegs 'n deel vereis word**  
 Lees alles en krediteer die relevante dele.
4. **Indien vergelykings vereis, maar beskrywings word gegee**  
 Aanvaar indien die verskille/ooreenkomste duidelik is.
5. **Indien tabulering vereis word en paragrawe word gegee**  
 Kandidate sal punte verbeur indien nie getabuleer nie.
6. **As geannoteerde diagramme aangebied in plaas van beskrywings wat vereis word**  
 Kandidate sal punte verbeur.
7. **Indien vloedigramme i.p.v beskrywings aangebied word**  
 Kandidate sal punte verbeur.
8. **Indien die volgorde vaag en skakelings nie sin maak nie**  
 Krediteer waar volgorde en skakelings korrek is. Waar volgorde en skakelings nie korrek is nie, moenie krediteer nie. As die volgorde weer korrek is, gaan voort om te krediteer.
9. **Onherkenbare afkortings**  
 Aanvaar indien dit aan begin van antwoord omskryf is. Indien dit nie omskryf is nie, moenie die onherkenbare afkorting krediteer nie, maar krediteer die res van die antwoord indien dit korrek is.
10. **Verkeerd genommer**  
 Indien die antwoorde die regte volgorde van die vrae pas, is dit aanvaarbaar.
11. **Indien die taal wat gebruik word die bedoelde betekenis verander**  
 Moenie aanvaar nie.

12. **Spelfoute**  
Aanvaar as dit herkenbaar is, met die voorbehoud dat dit nie iets anders in Biologie beteken nie of as dit buite konteks is.
13. **Indien gewone name gegee word in terminologie**  
Aanvaar, indien dit by die memobespreking aanvaar is.
14. **Indien slegs letter vereis word en slegs die naam word gegee (en andersom)**  
Geen krediet
15. **As eenhede van mate nie aangedui word**  
Kandidate sal punte verbeur. Memorandum sal afsonderlike punte vir eenhede aandui.
16. Wees sensitief vir die **betekenis van die antwoord, wat soms op verskillende maniere aangebied kan word**
17. **Opskrif.** Alle illustrasies (soos diagramme, tekeninge, grafieke, tabelle, ens.) moet van 'n opskrif voorsien word
18. As u twyfel, raadpleeg die memo in die ander taal, as u steeds twyfel vra die Provinsiale Interne Moderator om kontak met die Nasionale Interne of Eksterne Moderatore te maak.
19. **Vermenging van amptelike tale (terme/konsepte)**  
  
Slegs 'n enkele woord of twee wat in enige ander amptelike taal anders as die leerder se assesseringstaal waarin die meeste van sy/haar antwoorde aangebied word, moet gekrediteer word, indien dit korrek is. 'n Nasiener wat in die relevante amptelike taal vaardig is, behoort geraadpleeg te word. Dit geld vir alle amptelike tale.
20. Geen veranderinge mag aan die goedgekeurde memorandum aangebring word sonder dat daar met die Provinsiale Interne Moderator, wat op sy/haar beurt met die Eksterne Moderator(e), sal beraadslaag, nie.
21. Slegs memorandums wat die handtekeninge van die UMALUSI moderatore bevat en deur die Nasionale Departement van Onderwys versprei word, mag gebruik word.

## AFDELING A

## VRAAG 1

1.1.1 B✓✓

1.1.2 C✓✓

1.1.3 C✓✓

1.1.4 C✓✓

1.1.5 B✓✓

1.1.6 B✓✓

1.1.7 A✓✓

7 X 2 (14)

1.2.1 Asemhaling✓/inaseming en uitaseming/ventilasie

1.2.2 Anaërobies✓/fermentasie/gisting

1.2.3 Hemoglobien✓/(oksihemoglobien)

1.2.4 Sellulose✓/lignien/pektien

1.2.5 Pylorus✓

5 X 1 (5)

1.3.1 E✓✓

1.3.2 C✓✓

1.3.3 A✓✓

1.3.4 G✓✓

1.3.5 F✓✓

1.3.6 I✓✓

1.3.7 D✓✓

7 x 2 (14)

- 1.4.1 Inaseming✓/inhalasie/inspirasie/(asemhaling) (1)
- 1.4.2 B - longe✓  
C - diafragma✓  
D - tragea✓ } **Ken DRIE punte toe ongeag die antwoorde (✓✓✓)** (3)
- 1.4.3 (a) A – klokglas kan nie beweeg nie✓✓/ onbuigbaar of styf/  
kan nie in grootte of volume soos borsholte toeneem  
nie/besit nie spiere nie
- (b) B - ballonne bestaan uit rubber✓ en daarom geen  
gaswisselling✓  
OF  
ballonne vul nie die ruimte in die klokglas nie✓ daarom  
klein gaswissellingsoppervlak✓  
OF  
longe vul die hele borsholte✓ daarom groot  
gaswissellingsoppervlak✓  
OF  
balonne bevat nie alveoli nie✓ om gaswissellingsoppervlak  
te vergroot nie✓  
OF  
geen bloed✓ vir vervoer van gasse✓  
OF  
geen pleura✓ om wrywing te voorkom nie✓  
OF  
geen vog✓ vir diffusie van gasse✓ (2)
- (c) C - rubberplaat kan nie op sy eie saamtrek of verslap  
nie✓✓ (2)
- (10)**
- 1.5.1 (a) V – suurstof✓ (1)  
W – stysel✓/glukose/suikers/koolhidrate (1)
- (b) T - koolstofdiksied✓ (1)  
U - water✓ (1)
- 1.5.2 Grondwater✓/kapillêre water/reënwater/enige ander vorm van  
presipitasie bv. sneeu (1)
- 1.5.3 Diffusie✓ (1)
- 1.5.4 Mesofil✓ / Palissade/Sponsparenchiem/Chlorenchiem (1)
- (7)**
- TOTAAL AFDELING A: 50**

## AFDELING

## VRAAG 2

- 2.1.1 Villus✓/Dermvlokkie (1)
- 2.1.2 Dunderm✓/enige deel van dunderm (1)
- 2.1.3 Kolomepiteel✓ / (bekerselle) (1)
- 2.1.4 Lakteal✓/chylvat (1)
- 2.1.5 Kapillêre bloevate✓/bloedvate/ kapillêre (1)
- 2.1.6 Glukose✓/Monosakkariedes/ enige benoemde monosakkariede of Aminosure (1)
- 2.1.7 Aminasure✓ of Glukose/Monosakkariedes/ enige benoemde monosakkariede } **Moenie enige antwoord aanvaar wat alreeds in 2.1.6 aanvaar is nie** (1)
- 2.1.8 Limf✓/limfvat (1)
- 2.1.9 Vetsure✓ / gliserol (1)
- 2.1.10 Gliserol✓ / vetsure **Moenie enige antwoord aanvaar wat alreeds in 2.1.9 aanvaar is nie** (1)
- (10)**
- 2.2
- Die villi✓/ mikrovilli verhoog die tyd/ verleng die deurgangtyd van voedsel✓ vir maksimum absorpsie
  - Baie villi✓/ mikrovilli vergroot die oppervlak✓ vir maksimum absorpsie
  - Vingeragtige uitsteeksels✓ vergroot die oppervlakarea✓ vir absorpsie
  - Teenwoordigheid van chylvate/lakteaal vate en kapillêre bloedvate✓ om geabsorbeerde voedingstowwe te vervoer✓
  - Die wande van die villus bestaan uit 'n enkellaag✓/ kolomepiteelselle/dun wat veroorsaak dat voedingstowwe maklik deurbeweeg✓
  - verteringsappe✓/ bekerselle / mukus hou die absorpsieoppervlak vogtig✓ wat absorpsie bevorder
  - kolomepiteelselle besit groot aantal mitochondrions✓ vir aktiewe absorpsie✓
- (Merk slegs eerste DRIE)**
- Enige 3 X 2 **(6)**
- 2.3.1
- In proefbuis I sal 'n olielaag weer op die water vorm✓/ meng nie/ olie los nie op nie
  - In proefbuis 11 vorm 'n troebelrige✓/wit emulsie/meng/ olie los in die eter op (2)



- 2.3.2 (a) Om vir die teenwoordigheid van proteïene te toets✓  
 (b) Om vir die teenwoordigheid van glukose te toets✓/  
 reduserende suiker (2)
- 2.3.3 (a) Wynrooi✓ /baksteenrooi/violet/pienk/pers  
 (b) Oranje✓/baksteenrooi/geelbruin/oranjegeel/oranjerooi (2)
- 2.3.4 - Reserwe energiebron✓  
 - Strukturele komponent van selmembrane✓  
 - Dien onder die vel as 'n isoleerder ✓  
 - Beskerm inwendige organe✓/skokabsorbeerder  
 - Speel 'n belangrike rol in die absorpsie van  
 vitamien A en D✓ (3)  
*(Merk slegs eerste DRIE)* Enige 3 X 1
- (9)
- TOTAAL VRAAG: 2      25**

## VRAAG 3

- 3.1.1 (a) - Kalsium✓  
- Fosfor✓  
- Vitamien D✓  
**(Merk slegs eerste DRIE)** (3)
- (b) - Yster✓  
- Jodium✓  
**(Merk slegs eerste TWEE)** (2)
- 3.1.2 - Is 'n strukturele komponent van selmembrane✓  
- Vir groei / herstel van liggaamsweefsels✓  
- Produksie van ensieme en hormone✓  
- Boustowwe✓ / spiere, ens.  
- Reserwe energie✓  
- Funksioneer as teenliggaampies✓ / beskerming teen siektes  
- Vorm chromosome✓  
- Bestandeel van protoplasma✓  
- Vervoer✓ bv. hemoglobien  
- (Sekere proteïene tree as buffers op) ✓  
- Sekere proteïene help met die stolling van bloed✓ bv. fibrinogeen  
**(Merk slegs eerste DRIE)** Enige 3 X 1 (3)
- 3.1.3 (a) Jodium✓ (1)  
(b) Jodium✓ (1)  
(c) Vitamien B<sub>1</sub>✓ / Tiamien (1)
- (11)**
- 3.2.1 Kwasjiorkor✓ kind het 'n tekort aan proteïene in sy dieet✓✓ / toon alreeds simptome van 'n geswolle buik  
  
Marasmus✓ neem nie genoeg voedsel in nie✓✓ / kalorieë / toon simptome soos moegheid  
  
Skeurbuik✓ nie genoeg vrugte/groente✓✓  
  
Ragitis✓ nie genoeg kalsium van melk✓✓  
  
Nagblindheid✓ nie genoeg vitamien A✓✓  
  
Beri-beri✓ nie genoeg vleis en melk✓✓  
  
Enige 2 x 3 **(6)**
- 3.2.2 koolhidrate✓ (1)
- 3.2.3 3,5 - 4✓ kg✓ (2)

- 3.2.4 10 maande - een jaar oud ✓ tydens die fase het die gewigsverlies  
begin ✓✓ / kurwe gaan afwaarts (3)
- 3.2.5  $(20 - 10) \checkmark = 10 \checkmark \text{ kg}$  (2)
- TOTAAL VRAAG 3: (14)**
- (25)**

## VRAAG 4

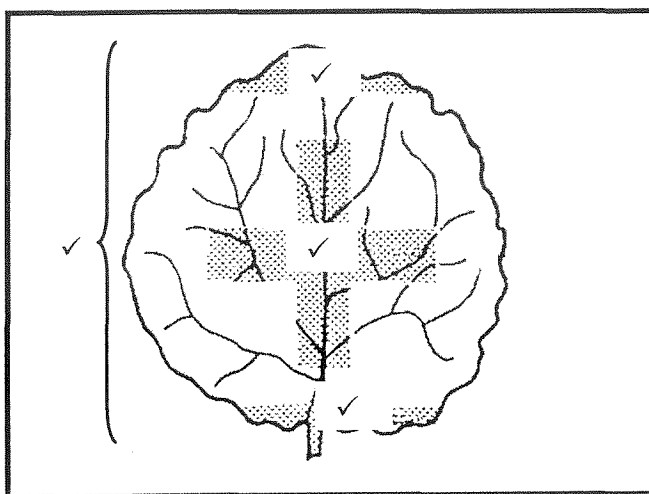
4.1.1 Om te bepaal of lig✓ vir fotosintese✓ noodsaaklik is (2)

4.1.2 (a) - Om die plant te ontstysel✓✓ / om seker te maak dat die blare geen stysel bevat nie/ om al die stysel teenwoordig op te gebruik (2)

(b) - Om die blare sag te maak✓✓/ die selle dood te maak/ die selwande te breek om hulle deurlaatbaar vir alkohol en jodiumoplossing te maak (2)

(c) - Om die chlorofil te onttrek✓✓ (2)

4.1.3



Vorm van die blaar = 1; Posisie en vorm van gekleurde dele wat positief getoets het = 3

**Indien gekleurde dele nie aangedui is nie maar korrekte byskrifte vir blouswart gegee is, ken maks. 2 punte toe**

(4)  
(12)

4.2.1 Dit absorbeer koolstofdiksied✓ (1)

4.2.2 (a) Kalkwater bly helder✓✓ (2)  
(b) Kalkwater word melkerig✓✓ (2)

4.2.3 - Kalkwater in fles D bly helder✓  
omdat daar geen respirasie plaasvind nie,  
word koolstofdiksied nie vrygestel nie✓✓ (3)  
**[ken 3 punte toe ongeag wat die antwoord is (✓):**

4.2.4 (Sellulêre) respirasie✓ (1)  
(9)

- 4.3.1 Gesonde lugsakke/ A het diep voue tussen die alveoli✓  
 Persoon met emfiseem/ B het vlak voue tussen alveoli/  
 disintegrering van die alveoli
- Gesonde lugsakke/ A het wyer brongioles✓/vestibulum  
 Persoon met emfiseem/ B het smaller brongioles/vestibulum
- A het 'n groter oppervlak as B✓ Enige 2 X 1 (2)
- 4.3.2 - Alveoli met vlakke voue✓ het 'n kleiner oppervlak✓ vir  
 gaswisseling✓
- Die hoeveelheid lug wat invloei ✓/en die spoed waarteen  
 lug ✓moes vloei word deur die smal brongioles onderdruk✓ (2)  
 Enige 1 X 2
- (4)
- TOTAAL VRAAG 4: (25)**

## VRAAG 5

- 5.1.1 A - sloerfase✓/vestigingsfase (1)  
 B - versnellende fase✓/ groeifase/logaritmiëse/eksponensiële/  
 geometriëse (1)  
 E - dravermoë✓ (1)
- 5.1.2 (a) bevolking akklimatiseer✓✓  
 individue soek paargenote✓ ✓  
 bevolking nog onvolwasse✓ ✓  
**(Merk slegs eerste een)** Enige 1 X 2 (2)
- (b) Oorvloed hulpbronne✓✓/voedsel/ water/ ruimte  
 Geboortetempo hoër as sterftempo✓✓  
 Min beperkende faktore✓✓/lae omgewingsweerstand  
**(Merk slegs eerste EEN)** Enige 1 X 2 (2)
- 5.1.3 Sensus✓/telling  
**(Merk slegs eerste EEN)** (1)
- 5.1.4 (a) C✓/A (1)  
 (b) D✓ (1)
- 5.1.5 Tekort aan ruimte✓  
 Tekort aan water✓  
 Toename in predasie✓  
 Siektes ✓  
 Enige omgewingsfaktor bv. vuur✓  
 Toename in kompetisie✓  
 Jag✓/stroping  
 Emmigrasie✓  
 Mortaliteit✓ (4)  
**(Merk slegs eerste VIER)** Enige 4 X 1 (14)
- 5.2.1  $(20 \times 30) \div 5 = 120$ ✓ (3)
- 5.3.1 - in kontak met besmette sekresies/speeksel/nasale sekresies✓  
 - in kontak met besmette ekskresies/feses✓  
 - oppervlakte besmet met sekresies of ekskresies✓  
**(Merk slegs eerste TWEE)** Enige 2 X 1 (2)
- 5.3.2 - koors✓  
 - seer keel✓  
 - oog infeksies✓  
 - longontsteking✓  
 - gaswissellingsiektes✓  
**(Merk slegs eerste DRIE)** Enige 3 X 1 (3)

- 5.3.3 Digtheidsonafhanklik✓ (1)
- 'n Besmette voël kon oor 'n gebied gevlieg het en besmette feses laat val het wat die siekte kon begin het✓✓/die voëlgriep siekte is nie afhanklik van die digtheid van die bevolking nie (2)
- OF
- Digheidsafhanklik✓
- As een voël besmet is, kan die siekte maklik na die ander voëls versprei word veral as die populasie digbevolk is ✓✓
- (8)
- TOTAAL VRAAG 5: (25)**
- GROOTTOTAAL: 150**