## SECTION A

## QUESTION 1

1.1

1.1.1 D

1.1.2 D

1.1.3 B

1.1.4 C

1.1.5 A (5 x 2 ) **(10)**

1.2

1.2.1 Renal medulla

1.2.2 Osmosis

1.2.3 Water

1.2.4 Urine

1.2.5 Water potential

1.2.6 Excretion

1.2.7 Renal capsule

1.2.8 Renal pelvis (8 x 1) **(8)**

1.3

1.3.1 Both A and B

1.3.2 Both A and B

1.3.3 Both A and B

1.3.4 B only

1.3.5 A only (5 x 2 ) **(10)**

1.4

1.4.1 Cell 1: Plasmolysis (1)

Shoot G: Wilting/plasmolysis (1) (2)

1.4.2 A: Cell membrane (1)

B: Cell wall (1)

C: Nucleus (1)

D: Cytoplasm/ cytosol (1)

E: Tonoplast /vacuole (1) (5)

1.4.3 Cell 1 (1) (1)

1.4.4 (i) Cell 1 (1) (1)

(ii) Cell 2 (1) (1)

1.4.5 - Cell is turgid (1)
- and shoot F is stiff / also turgid / not wilted (1) (2)
**(12)**

1.5

1.5.1 A - Pinna (1)
- directs sound waves into the auditory canal/traps sound waves (1)

B - Auditory canal (1)
- transmits sound waves (1)

F - Auditory nerve (1)
- conducts impulses (1) to the brain (6)

1.5.2 (i) E (1) Ampulla (1) / C (1) sacculus (1) (2)

(ii) G (1) Cochlea (1) (2)

1.5.3 The swallowing opens the Eustachian tube (1)
to equalize the pressure on both sides of tympanic membrane (1)

**OR**

The Eustachian tube is connected to the pharynx (1)
bringing air into pharynx which pushes into Eustachian tube (1) (2)

1.5.4 - Transmission of sound waves will be hindered (1)
- Sound waves will not be amplified (1)
- and hearing will be impaired/no proper hearing (1) (any 2)(2)
**(14)**

1.6

1.6.1 - The absence of the auxins in B allowed the buds to develop into lateral branches /removal of apical dominance (1)
- and the presence of the auxins in C prevented the development of buds/the presence of auxins lead to apical dominance (1)
(2)

1.6.2 At the tip (1) of the shoot (1)

1.6.3 (i) Main shoot will continue to grow upright / Side branches will grow towords light (1) (1)

(ii) - Auxins absent (1)
- because tip is cut off (1)
- thus no unequal elongation of cells/no bending towards light source (1) (any 2) (2)
**(6)**

**TOTAL QUESTION 1: 60**

**TOTAL SECTION A: 60**

## SECTION B

## QUESTION 2

2.1

2.1.1 - Centre has support (1)
- of a large amount of xylem /veins/supporting tissue e.g collenchyma (1)
- which maintains the shape of the leaf irrespective of whether cells are turgid or not (1)

(3)

2.1.2 - Water loss (1)
- as a liquid (1)
- through the hydathodes (1)
- as a result of root pressure (1) (any 3) (3)

2.1.3 - High humidity (1)
- Low light intensity (1)
- Abundance of soil water (1) (any 2) (2)

**(8)**

2.2

2.2.1 To investigate which surface of the leaf (1) transpires most (1) (2)

2.2.2 - B (1)
- takes longer time (1) for cobalt chloride paper to turn pink
- which means less water lost per unit time (1)
- which implies the plant has adaptations (1) to limit transpiration (4)

2.2.3 - More water loss through lower surface (1)
- because of the presence of more stomata (1) (2)

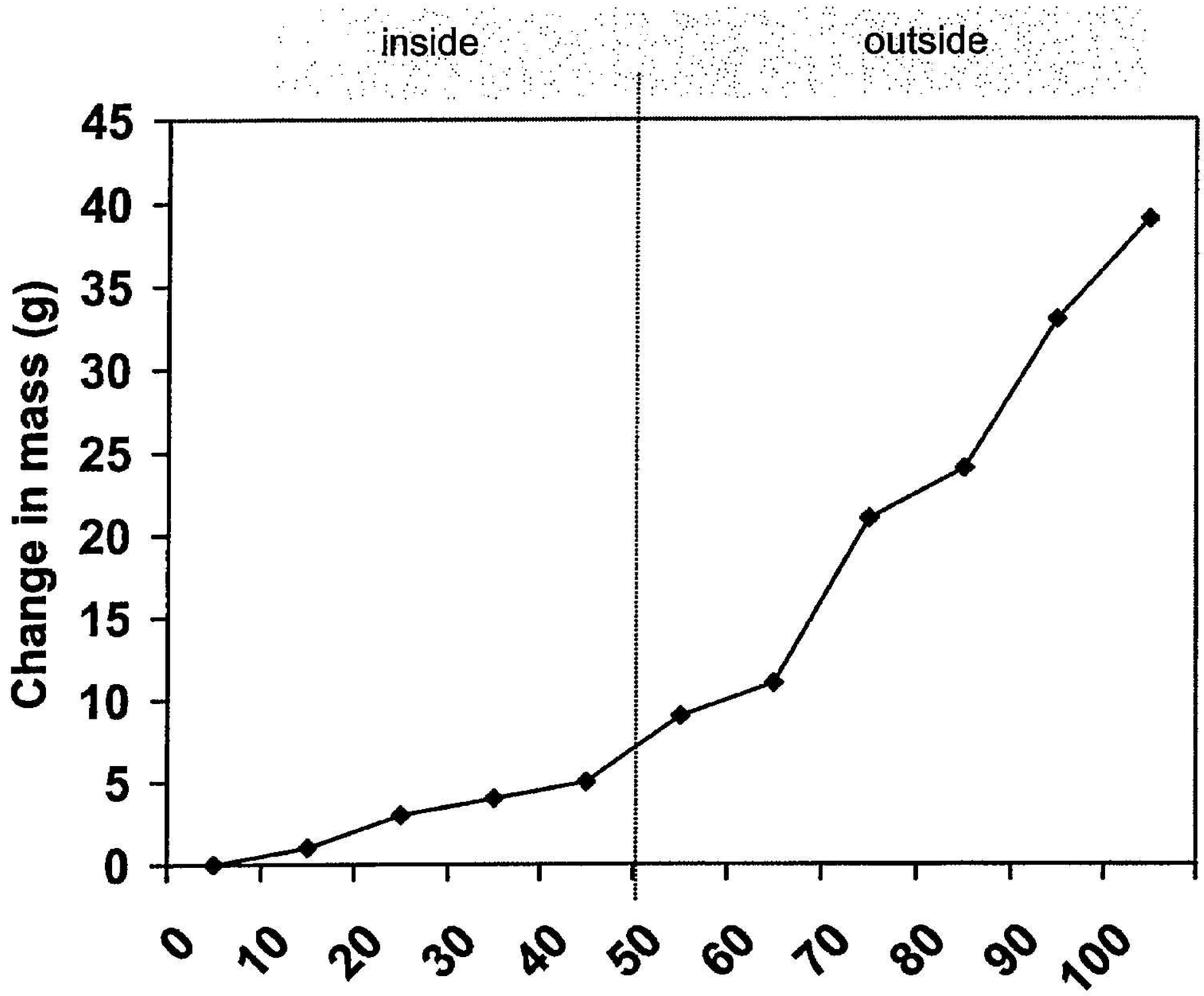
2.2.4 - Temperature will be higher (1)
- because less stomatal pores available for transpiration (1)
- transpiration rate is lower (1)
- thus less heat lost (1)
- through evaporation (1) of water (5)

**(13)**

2.3

2.3.1 ***Graph showing the change in mass inside and outside the classroom***




***Rubric for the mark allocation of the graph***

| | | | | |
|---|---|---|---|---|
| Correct type of graph | 1 | | | |
| Title of graph | 1 | | | |
| Correct label for X-axis including correct units | 1 | | | |
| Correct label for Y-axis including correct units | 1 | | | |
| Appropriate scale for X-axis | 1 | | | |
| Appropriate scale for Y-axis | 1 | | | |
| Plotting of points for graph | 3: plotted all 11 points correctly | 2 : plotted six or more of the points correctly | 1: plotted five or less of the points correctly | 0: no points plotted |
| All plotted points joined | 1 | | | |

Wrong type of graph is drawn : marks will be lost for "correct type of graph" as well as for "plotting of points" (10)

2.3.2 High light intensity (1)
High temperature (1)
Wind (1)
Low humidity (1) (any 2) (2)

2.3.3 - Repeat the investigation several times (1)
to compensate for human error / unforeseen variables (1)

**OR**

- Replace cotton wool with rubber stopper/ oil layer (1)
which is water tight/water vapour cannot pass through (1) (2)
**(14)**

**TOTAL QUESTION 2 : 35**

**QUESTION 3**

3.1

3.1.1 (i) - D (1)
- contains proteins/highest flow rate (1) (2)

(ii) - B (1)
- High concentration of glucose, but no proteins (1) (2)

(iii) - C (1)
- No glucose, and sodium ion and urea lower in concentration than D (1) (2)

(iv) - A (1)
- has the highest concentration of urea (1) (2)

3.1.2 - High flow rate in D because of heart beat/ arterial blood (1)
- flow rate decreased in glomerulus (1)
- because of smaller diameter of capillaries / flow divided into many capillaries (1)
- also flow rate is decreased as the fluid passes through membranes (1)
hence low flow rate when fluid enters capsule
- where pressure of heart beat is absent (1)
- also large volume comes in and has to squash out through smaller volume allowed by efferent arteriole(1) therefore slows it down. any 4) (4)

3.1.3 - Cells of the glomerular membrane are damaged (1)
- proteins can be forced through and will then appear in urine (1) (2)

3.1.4 When the blood is too acidic / pH is too low
- then more hydrogen ions (1)
- are passed from the blood (1)
- into the renal tubule (1)
- and more bicarbonate ions (1)
- are passed from the renal tubule to the blood (1)
- thus increasing the pH of the blood to normal (1) any 4 (4)

3.1.5 - Excretion (1) of urea, sodium ions and ammonium ions
- Re-absorption/regulation of glucose (1)
- Osmoregulation (1) any 2 (2)

3.1.6 - No (1)
- all amino acids are re absorbed into the blood (1) (2)

3.1.7 (i) Sodium/Na (1) (1)

(ii) - to create a hypertonic tissue fluid (1)
- so that water can be reabsorbed by osmosis from the collecting ducts (1) (2)

3.1.8 - Cup shaped (1)
large surface area (1) available for filtration
- podocytes (1) with slits
to filter (1) the tissue fluid (4)

**(29)**

3.2

3.2.1 No (1) (1)

- because animal is mostly immersed in water
hence no water loss through sweating (1)
- less need for water conservation/ re-absorption (1) by long tubule of Henlé /water is not a limiting factor, therefore not as much need to conserve water as can drink more (1) (any 2) (2)

3.2.2 Increase (1) (1)

- because a high ADH concentration increases water permeability (1) of collecting ducts
- more water reabsorbed (1) and ends up in the blood
- thereby increasing blood volume (1) and thus the blood pressure (any 2) (2)

**(6)**

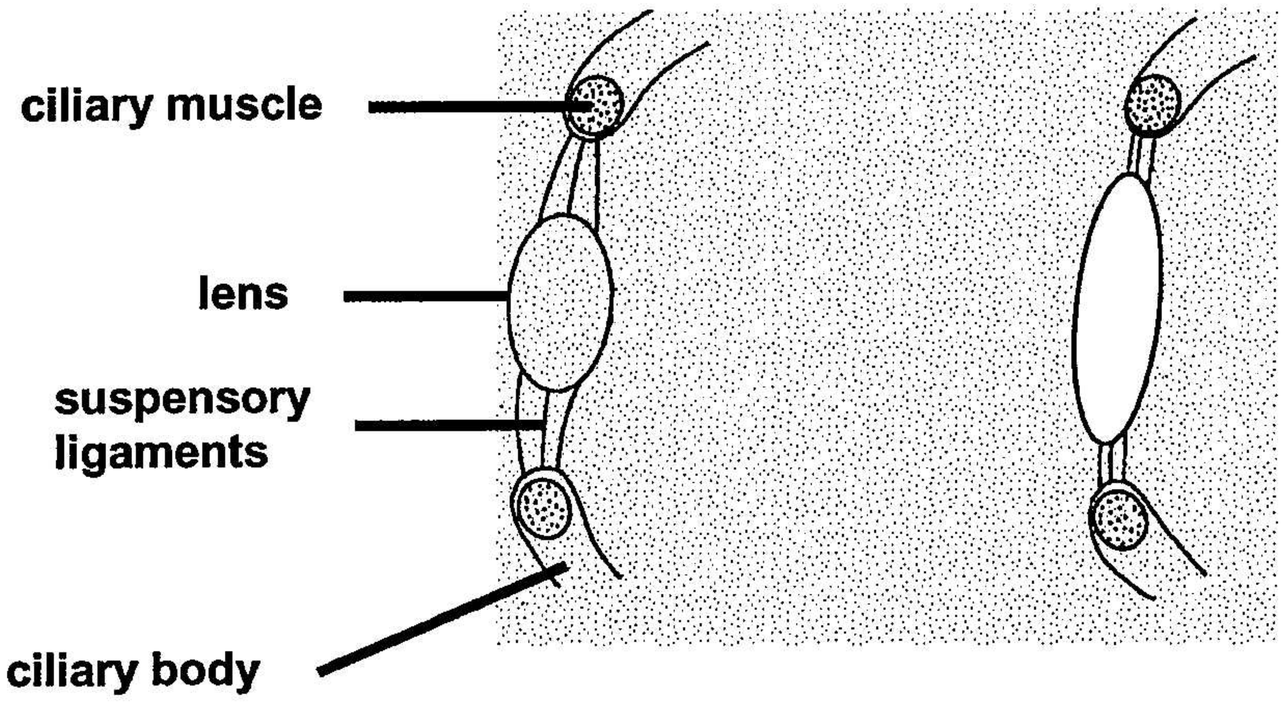
**TOTAL QUESTION 3: 35**

## QUESTION 4

4.1 Structures involved in accommodation for:

(i) Reading a book (1) (ii) Looking at a hill (1)




**Mark allocation:**
**Caption** (2)
**Any three labels** (3)
**Drawing:** Nearby vision lens more convex than distant vision lens (1)
Suspensory ligaments relaxed in nearby vision and tightened in distant vision (1) **NB: No marks if only one diagram is drawn** **(7)**

4.2

4.2.1 Endothermic (1) (1)

4.2.2 Show a similar pattern/increase or decrease in temperature of blood in tail is followed by the same trend in the volume of the blood in the tail (1) (1)

4.2.3 - Because of the increased temperature gradient (1) between the body and the environment
- more heat is lost (1) to the environment
- Increased muscle tone and shivering due to increase in respiration (1) in muscle cells
- whereby more heat/energy is generated (1) in the body
- to compensate (1) for the heat loss to the environment (any 4) (4)

4.2.4 (i) Heat exchange/countercurrent blood flow (1) (1)

(ii) - Blood vessels close to each other (1) to allow heat exchange (1)
- Blood flows in opposite directions (1) to cause a constant temperature gradient (1) (4)

(iii) - Tail has a larger surface to volume ratio (1)
- that will lead to more heat loss to the environment (1)
- through the larger surface area (1)
- Lower temperature of the blood in the tail ensures smaller temperature gradient (1) between the body and the environment
- thus less heat is lost (1) to the environment
- to help to maintain a constant (1) body temperature (any 4) (4)

**(15)**

4.3 - Many reptiles can change (1) their colour
- to become lighter (1)
- in order to reflect more light /absorb less light (1)
- to prevent heating up the body/the increase of the body temperature (1)
(any 3) **(3)**

4.4

4.4.1 Adrenalin (1) (1)

4.4.2 On top of the kidney (1) (1)

4.4.3 - More blood flows to the muscles (1) and less to non-essential (in an emergency) parts of the body like the gut (1)
- thus more fuel (1)
- and oxygen (1)
- for increased respiration/oxidation/metabolic rate (1)
- to provide sufficient energy (1)
- for fight/flight/to deal with the situation (1) (any 4) (4)

4.4.4 Pupil/Iris (1) (1)

4.4.5 - Pupil becomes larger (1)
- to allow more light to enter the eye (1)
- for better sight (1)
- aids judgement (1) of the situation (any 3) (3)

**(10)**

**TOTAL QUESTION 4: 35**

**TOTAL SECTION B: 105**

## QUESTION 5

5.1.1 0 – 2 years (2) / during first two years after birth (2) (2)

5.1.2 6 – 1,5 = 4,5 **(1)** kg/year (1) (2)

5.1.3 Boys: 13 to 14 **(1)** years (1)
Girls: 12 to 13 **(1)** (3)

5.1.4 From the $12^{th}$ – $14^{th}$ (2) year (2)

5.1.5 Growth hormone / Thyroxin (1) (1)

5.1.6 18 **(1)** (1)

5.1.7 - Females reach the second increase in growth rate/ puberty earlier than males(2)
- Females reach their final adult size earlier than males (2 )
- Females have a smaller adult size than males(2) (6)
**(17)**

5.2 Homeostasis is the maintenance of a constant internal environment (1)
When the metabolic rate is low (1)
because of low thyroxin concentration (1)
the pituitary gland (1)
is stimulated (1)
to secrete TSH (1)
which is transported by the blood (1)
to the thyroid gland (1)
which is stimulated to secrete more (1) thyroxin
which is transported to cells (1)
to increase the metabolic rate (1)
If the metabolic rate increases above the normal level (1)
the pituitary gland is inhibited (1)
therefore less (1) TSH
and therefore less thyroxin (1) is secreted
The metabolic rate is lowered to normal (1)
The autonomic nervous system also influences the metabolic rate through double innervation (1)
which functions antagonistically (1)
One section is stimulatory,(1)
while the other section is inhibitory (1)
A constant internal environment (1)
is thus maintained through negative feedback. (1)

any 15 (15)

**Synthesis**

| | |
|---|---|
| Not attempted | 0 |
| Significant gaps in the logic and flow of the answer | 1 |
| Minor gaps in the logic and flow of the answer | 2 |
| Well structured – demonstrate insight and understanding of the question | 3 |

(3)
**(18)**

**TOTAL QUESTION 5: 35**

**TOTAL SECTION C: 35**

**GRAND TOTAL: 200**

## AFDELING A

## VRAAG 1

1.1

1.1.1 D

1.1.2 D

1.1.3 B

1.1.4 C

1.1.5 A (5 x 2 ) **(10)**

1.2

1.2.1 Niermedulla

1.2.2 Osmose

1.2.3 Water

1.2.4 Uriene

1.2.5 Waterpotensiaal

1.2.6 Uitskeiding/Ekskresie

1.2.7 Nierkapsel

1.2.8 Nierpelvis/-bekken (8 x 1) **(8)**

1.3

1.3.1 Beide A en B

1.3.2 Beide A en B

1.3.3 Beide A en B

1.3.4 Slegs B

1.3.5 Slegs A (5 x 2 ) **(10)**

1.4

1.4.1 Sel 1: Plasmolise (1)

Takkie G: Verwelking/plasmolise(1) (2)

1.4.2 A: Selmembraan (1)

B: Selwand (1)

C: Selkern (1)

D: Sitoplasma / sitosol (1)

E: Tonoplas / vakuool (1) (5)

1.4.3 Sel 1 (1) (1)

1.4.4 (i) Sel 1 (1) (1)

(ii) Sel 2 (1) (1)

1.4.5 - Sel is turgessent (1)
- en takkie F is stewig / ook turgessent / nie verlep nie(1) (2)
**(12)**

1.5

1.5.1 A - Pinna (1)
- gelei klankgolwe na die gehoorkanaal/vang klankgolwe op (1)

B - Gehoorkanaal (1)
- gelei klankgolwe (1)

F - Gehoorsenuwee (1)
- gelei impulse (1) na die brein (6)

1.5.2 (i) E (1) Ampulla (1) / C (1) Sakkulus (1) (2)

(ii) G (1) Koglea (1) (2)

1.5.3 Die slukproses maak die buis van Eustachius oop (1)
om die druk aan weerskante van die trommelvlies gelyk te maak (1)
**OF**
Die buis van Eustachius is aan die farinks verbind (1)
wat lug na die farinks bring wat tot in die buis van Eustachius druk (1) (2)

1.5.4 - Oordrag van klankgolwe sal belemmer word (1)
- Klankgolwe sal nie versterk word nie(1)
- en gehoor sal belemmer word/sal nie reg hoor nie (1) (enige 2) (2)
**(14)**

1.6

1.6.1 - Die afwesigheid van ouksiene in B het veroorsaak dat die knoppe tot sytakke ontwikkel / Geen apikale oorheersing nie (1)
- en die teenwoordigheid van ouksiene in C het die ontwikkeling van syktakke verhoed / gelei tot apikale dominansie (1) (2)

1.6.2 Aan die punt (1) van die takkie (1)

1.6.3 (i) Hoof takkie sal aanhou regop groei / sytakke groei na die lig(1) (1)

(ii) - Ouksiene is afwesig (1)
- want die punt is afgesny (1)
- dus geen oneweredige verlenging van selle/geen buiging na die ligbron nie (1) (enige 2) (2)

**(6)**

**TOTAAL VRAAG 1: 60**

**TOTAAL AFDELING A: 60**

## AFDELING B

## VRAAG 2

2.1

2.1.1 - middel het ondersteuning (1)
- van groot hoeveelheid xileem / nerwe / ondersteuningsweefsel bv. kollenchiem (1)
- wat die vorm van die blaar onderhou ongeag of die selle turgessent is of nie (1)

(3)

2.1.2 - Waterverlies (1)
- as 'n vloeistof (1)
- deur die hydatodes (1)
- as gevolg van worteldruk (1) (enige 3) (3)

2.1.3 - Hoë humiditeit (1)
- Lae ligintensiteit (1)
- Baie grondwater (1) (enige 2) (2)

**(8)**

2.2

2.2.1 Om te ondersoek watter oppervlakte van die blaar (1) transpireer die meeste (1) (2)

2.2.2 - B (1)
- neem langer tyd (1) vir kobaltchloried om pienk te word
- wat beteken minder waterverlies per tydseenheid (1)
- wat impliseer die plant het aanpassings (1) om transpirasie te beperk (4)

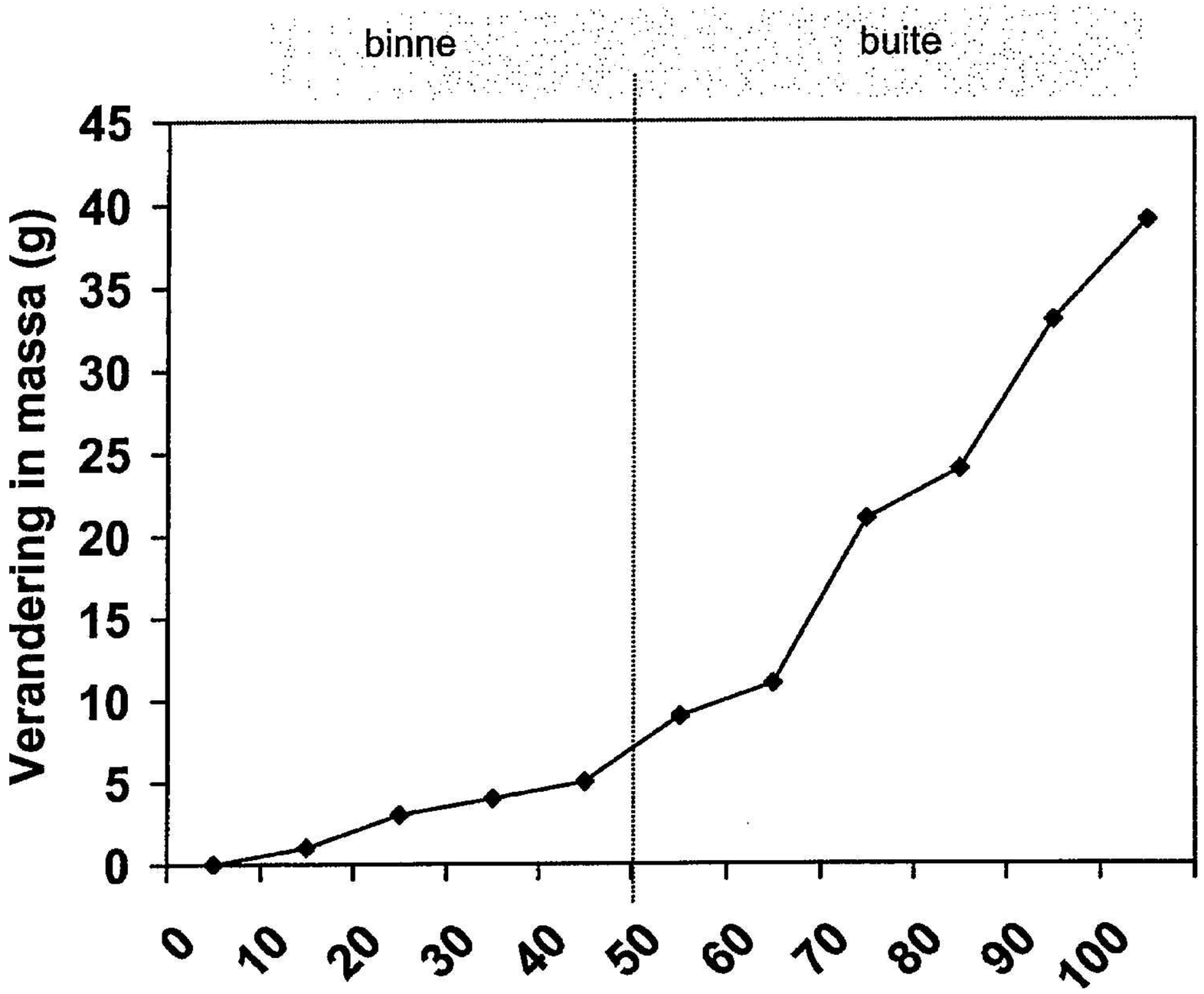
2.2.3 - Meer waterverlies deur die onderste oppervlakte (1)
- weens die teenwoordigheid van meer stomata (1) (2)

2.2.4 - Temperatuur sal hoër wees (1)
- omdat minder stomata beskikbaar is vir transpirasie (1)
- is transpirasietempo laer (1)
- dus gaan minder hitte verlore(1)
- deur verdamping (1) van water (5)

**(13)**

2.3

2.3.1 ***Grafiek wat die verandering in massa binne en buite die klaskamer toon***




***Rubriek vir die puntetoekenning van die grafiek***

| | | | | |
|---|---|---|---|---|
| Korrekte tipe grafiek | 1 | | | |
| Titel van grafiek | 1 | | | |
| Korrekte byskrif vir X-as insluitend korrekte eenhede | 1 | | | |
| Korrekte byskrif vir Y-as insluitend korrekte eenhede | 1 | | | |
| Geskikte skaal vir X-as | 1 | | | |
| Geskikte skaal vir Y-as | 1 | | | |
| Neerstip van punte vir grafiek | 3: al 11 punte korrek neergestip | 2 : ses of meer van diepunte korrek neergestip | 1: vyf of minder van die punte korrek neergestip | 0:geen punte neergestip |
| Al die neergestipte punte is verbind | 1 | | | |

Verkeerde tipe grafiek geteken : punte sal verloor word vir "korrekte tipe grafiek" sowel as vir "neerstip van punte" (10)

2.3.2 - Hoë ligintensiteit (1)
- Hoë temperatuur (1)
- Wind (1)
- Lae humiditeit (1) (enige 2) (2)

2.3.3 - Herhaal die ondersoek 'n aantal kere (1)
om voorsiening te maak vir menslike foute / onvoorsiene veranderlikes (1)

**OF**

- Vervang die watte met 'n rubberprop / olie lagie (1)
wat waterdig is / waterdamp kan nie deur beweeg nie (1) (2)
**(14)**

**TOTAAL VRAAG 2 : 35**

**VRAAG 3**

3.1

3.1.1 (i) - D (1)
- Bevat proteïene / hoogste vloeitempo (1) (2)

(ii) - B (1)
- Hoë glukosekonsentrasie, maar geen proteïene (1) (2)

(iii) - C (1)
- Geen glucose, en natriumioon- en ureumkonsentrasie is laer as in D (1) (2)

(iv) - A (1)
- Het die hoogste ureumkonsentrasie (1) (2)

3.1.2 - Hoë vloeitempo in D a.g.v. hartklop / arteriële bloed (1)
- vloeitempo het gedaal in glomerulus (1)
- a.g.v. die kleiner deursnee van die kapillêres / vloei verdeel in menige kapillêres (1)
- vloeitempo neem ook af soos die vloeistof deur membrane beweeg (1)
daarom die lae vloeitempo wanneer die vloeistof die kapsel binnegaan
- waar die druk van die hartklop afwesig is (1)
- ook kom 'n groter volume in en moet deur kleiner volume van die efferente arteriool uitgeforseer word (1)
van die efferente arteriool (1) wat dit laat afneem. (enige 4) (4)

3.1.3 - Selle van die glomerulêre membraan is beskadig (1)
- proteïene kan deur geforseer word en verskyn dan in die uriene (1) (2)

3.1.4 Indien die bloed te suur is / pH te laag is
- dan sal meer waterstofione (1)
- vanuit die bloed (1)
- tot in die nierbuisie beweeg (1)
- en meer bikarbonaatione (1)
- sal uit die nierbuisie tot in die bloed beweeg (1)
- om sodoende die pH van die bloed na normal te verhoog (1)

(enige 4) (4)

3.1.5 - Uitskeiding (1) van ureum, natriumione en ammoniumione
- Herabsorpsie / regulering van glukose (1)
- Osmoregulering (1) (enige 2) (2)

3.1.6 - Nee (1)
- alle aminosure word tot in die bloed herabsorbeer (1) (2)

3.1.7 (i) Natrium / Na (1) (1)

(ii) - om 'n hipertoniese weefselvloeistof te skep (1)
- sodat water deur osmose uit die versamelbuis herabsorbeer kan word (1) (2)

3.1.8 - Koppievormig (1)
groot oppervlakte (1) beskikbaar vir filtrasie
- podosiete (1) met splete
om weefselvloeistof te filtreer (1) (4)
**(29)**

3.2

3.2.1 Nee (1)

- want dier is meestal onder water gedompel gevolglik geen waterverlies deur te sweet (1)
- kleiner behoefte vir behoud van water / herabsorpsie (1)
- deur lang buis van Henlé / water is nie 'n beperkende factor, daarom nie so 'n groot nood om water te behou nie aangesien meer water gedrink kan word (1)

enige (2)

3.2.2 Toeneem (1)

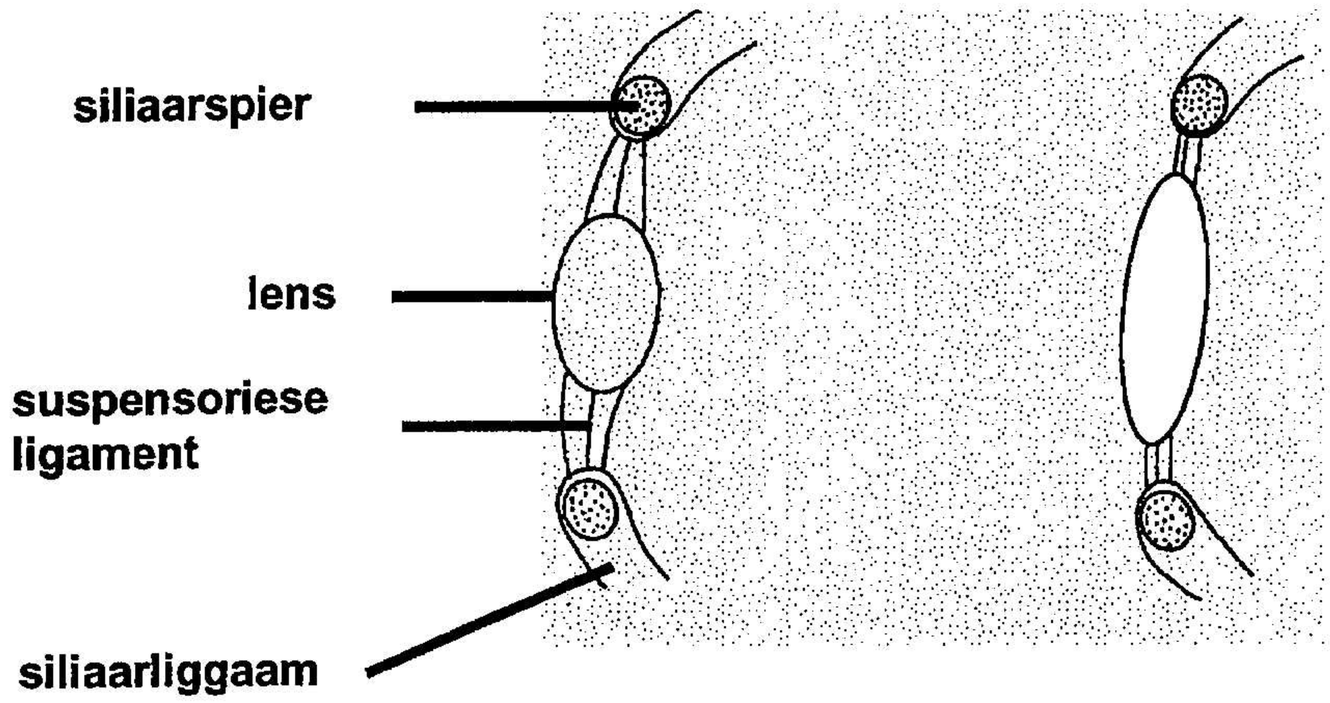
- want 'n hoë ADH-konsentrasie verhoog die waterdeurlaatbaarheid (1) van die versamelbuise
- meer water geherabsorbeer (1) en beland in die bloed
- en verhoog sodoende die bloedvolume (1)
en gevolglik die bloeddruk (enige 2) (2)
**(6)**

**TOTAAL VRAAG 3: 35**

## VRAAG 4

4.1 Strukture betrokke by akkommodasie vir:

(i) Lees boek (1) (ii) Kyk na heuwel (1)




**Puntetoekenning:**
**Opskrif** (2)
**Enige drie byskrifte** (3)
**Tekening:** Lens vir naby visie is meer konveks as dié vir ver visie (1)
Suspensoriese ligamente verslap by naby visie en styf by ver visie (1)
**LW: Geen punte indien slegs een diagram geteken is.**
**(7)**

4.2

4.2.1 Endotermies (1) (1)

4.2.2 Toon 'n soortgelyke patroon / styging of daling in temperatuur van bloed in stert word gevolg deur die selfde tendens in die volume van die bloed in die stert (1) (1)

4.2.3 - Want as gevolg van die verhoogde temperatuurgradiënt (1) tussen die liggaam en die omgewing
- word meer hitte (1) aan die omgewing verloor
- Verhoogde spiertonus en bewing a.g.v. verhoogde respirasie (1) in die spierselle
- waardeur meer hitte / energie (1) in in die liggaam gegenereer word
- om op te maak (1) vir die hitte wat aan die omgewing verloor word
(enige 4) (4)

4.2.4 (i) Hitte-uitruiling / teenstroom bloedvloei (1) (1)

(ii) - Bloedvate naby mekaar (1)
om hitte-uitruiling toe te laat (1)
- Bloed vloei in teenoorgestelde rigtings (1)
om 'n konstante temperatuurgradiënt daar te stel (1) (4)

(iii) - Stert het 'n groter oppervlakte tot volume verhouding (1)
- wat sal lei tot meer hitte-verlies aan die omgewing (1)
- deur die groter oppervlakte (1)
- Laer bloedtemperatuur in die stert verseker laer temperatuur-gradiënt (1) tussen die liggaam en die omgewing
- gevolglik word minder hitte (1) aan die omgewing verloor
- om te help om 'n konstante (1) liggaamstemperatuur te handhaaf
(enige 4) (4)
**(15)**

4.3 - Baie reptiele kan hulle kleur verander (1)
- om ligter te raak (1)
- sodat meer lig gereflekteer / minder lig geabsorbeer word (1)
- om te voorkom dat die liggaam warm gemaak word / liggaams-temperatuur toeneem (1) (enige 3) **(3)**

4.4

4.4.1 Adrenalien (1) (1)

4.4.2 Aan bokant van nier (1) (1)

4.4.3 - Meer bloed vloei na die spiere (1) en minder na die nie-essensiële (in 'n noodgeval) dele van die liggaam
- soos die dermkanaal (1)
- dus meer brandstof (1)
- en suurstof (1)
- vir verhoogde respirasie / oksidasie / metaboliese tempo (1)
- om genoeg energie te verskaf (1)
- vir veg / vlug / om situasie te hanteer (enige 4) (4)

4.4.4 Pupil/Iris (1) (1)

4.4.5 - Pupil word groter (1)
- sodat meer lig die oog binnedring (1)
- vir beter sig (1)
- help met beoordeling (1) van die situasie (enige 3) (3)
**(10)**

**TOTAAL VRAAG 4: 35**

**TOTAAL AFDELING B: 105**

## VRAAG 5

5.1.1 0 – 2 jaar (2) / gedurende die eerste twee jare na geboorte (2) (2)

5.1.2 6 – 1,5 = 4,5 **(1)** kg/jaar (1) (2)

5.1.3 Seuns: 13 tot 14 **(1)** jaar (1)
Dogters: 12 tot 13 **(1)**
(3)

5.1.4 Vanaf die $12^{de}$ – $14^{de}$ (2) jaar (2)

5.1.5 Groeihormoon / Tiroksien (1) (1)

5.1.6 18 **(1)** (1)

5.1.7 - Vrouens bereik die tweede toename in groeitempo / puberteit vroeër as mans(2)
- Vrouens bereik hulle finale volwassenheidsgrootte vroeër as mans (2 )
- Vrouens het 'n kleiner volwassenheidsgrootte as mans (2) (6)
**(17)**

5.2 Homeastase is die handhawing van 'n konstante interne omgewing (1)
Wanneer die metaboliese tempo laag is (1)
a.g.v 'n lae tiroksienkonsentrasie (1)
word die pituïtêre klier (1)
gestimuleer (1)
om TSH af te skei (1)
wat deur die bloed (1)
na die tiroïedklier (1) vervoer word
wat gestimuleer word om meer (1) tiroksien af te skei
wat na die selle (1) vervoer word
om die metaboliese tempo te verhoog (1)
Indien die metaboliese tempo bokant die normale vlak styg (1)
word die pituïtêre klier geïnhibeer (1)
derhalwe word minder (1) TSH
en sodoende minder tiroksien (1) afgeskei
Die metaboliese tempo word na normal afgebring (1)
Die outonome senuweestselsel beïnvloed ook die metaboliese tempo
deur dubbele-innovering (1)
wat antagonisties funksioneer (1)
Een deel is stimulerend (1)
terwyl die ander deel inhiberend is (1)
'n Konstante interne omgewing (1)
word dus duer negatiewe terugvoering gehandhaaf. (1)

enige 15 (15)

**Sintese**

| | |
|---|---|
| Geen poging aangewend | 0 |
| Aansienlike gapings in die logika en vloei van die antwoord | 1 |
| Geringe gapings in die logika en vloei van die antwoord | 2 |
| Goed gestruktureerd– demonstreer insig en begrip van die vraag | 3 |

(3)
**(18)**

**TOTAAL VRAAG 5: 35**

**TOTAAL AFDELING C: 35**

**GROOTTOTAAL: 200**