

**SECTION A****QUESTION 1**

1.1

1.1.1 B

1.1.2 C

1.1.3 B

1.1.4 D

1.1.5 A

**(5 x 2) (10)**

1.2

1.2.1 Tympanic membrane/eardrum

1.2.2 Perilymph

1.2.3 Xylem

1.2.4 Guttation

1.2.5 Capillarity

1.2.6 Xerophytes

1.2.7 Diffusion/Osmosis

1.2.8 Cuticle / hair (1)

**(8)**

1.3

1.3.1 D

1.3.2 E

1.3.3 A

1.3.4 F

1.3.5 C

**(5 x 2) (10)**

1.4

1.4.1 The level of the mercury in the glass tube will be higher (1) (1)

1.4.2 - Heavy substance (1) to show the strength of the suction force  
 - Does not mix with water (1)  
 - It is coloured (1) for clear observation (any 2) (2)

1.4.3 - Cut twig under water (1)  
 to prevent the entry of air into the xylem (1)  
 - Connection should fit tightly (1)  
 to prevent entry of air which will make movement of mercury impossible (1)  
 - Use sharp knife (1) to cut twig  
 to prevent damage (1) of xylem vessels  
 - treat mercury with great care (1)  
 since it is poisonous(1) (any 2 x 2) (4)  
 (7)

1.5

1.5.1 (i) A (1)  
 C (1)  
 I/F (1) } Mark first 3 only (3)

(ii) B (1)  
 D (1)  
 G (1) } Mark first 3 only (3)

(iii) D (1)  
 F (1)  
 K (1) } Mark first 3 only (3)

1.5.2 (i) Eye muscle (1) (1)

(ii) Retina (1) (1)

1.5.3 - Circular muscles (1)  
 - contract (1)  
 - Radial muscles (1)  
 - relax (1)  
 - pupil becomes smaller (1)  
 - less light (1) enters eye (any 4) (4)  
 (15)

**TOTAL QUESTION 1: 50**

**TOTAL SECTION A: 50**



**QUESTION 2**

2.1

2.1.1 (i) A: Vacuole/cell sap (1)

C: Root hair (1) (2)

(ii) B: Cortex cell /Parenchyma (1) (1)

2.1.2 - Thin/permeable cell wall (1)

- Large vacuole (1)

- Large surface area (1) (any 2) (2)

2.1.3 - The cell sap of the root hair has a lower (1) water potential

- while the surrounding soil water has a higher (1) water potential

- Water enters (1) the root hair

- by osmosis (1) (4)

**(9)**

2.2.1 (i) Diagram 2 (1) (1)

(ii) Leaves have wilted(1) (1)

(iii) - rate of transpiration (1)

- exceeded absorption of water (1)

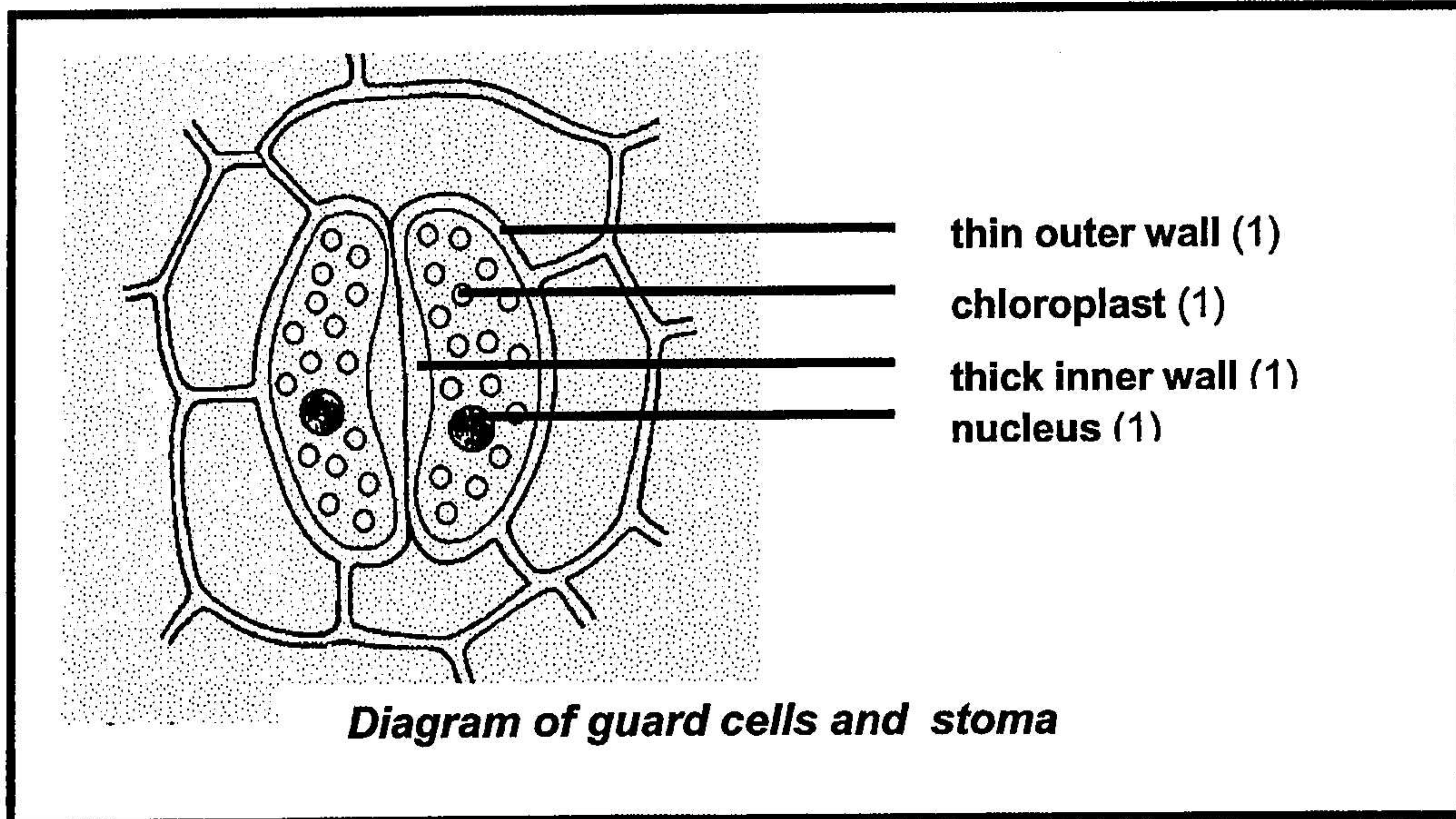
- because the temperature (1) at 12:00 is higher

- and the light intensity (1) is also higher

(any 3) (3)



2.2.2



**Criteria:**

- Pore closed (1)
- Neatness (1)
- Any three correct labels (3) (5)
- (10)**

2.3

2.3.1 Water molecules (1) (1)

2.3.2 - Bladder is differentially permeable (1)  
 - pores in the bladder are too small (1) for sugar molecules to pass through (2)

2.3.3 - Osmosis (1) occurred  
 - along the water potential gradient (1)  
 - from the beaker to the bladder (1) (3)

**(6)**

**TOTAL QUESTION 2: 25**



**QUESTION 3**

3.1

- 3.1.1 In the cortex (1) (1)
- 3.1.2 Diffusion / glomerular/ultra-/pressure filtration (1) (1)
- 3.1.3 Glomerulus/blood capillary (1) (1)
- 3.1.4 - Walls made up of a single/thin layer (1)  
to facilitate diffusion (1) of substances  
- Many tiny pores (1) act as micro-filters  
restricting large substances such as proteins/blood corpuscles(1)  
- Lots of capillaries (1)  
to ensure large surface area (1) (any 2 x 2) (4)
- 3.1.5 To create a high pressure (1) in C. (1)
- 3.1.6 Podocytes(1) (1)
- 3.1.7 ADH(1) (1)
- 3.1.8 - Makes collecting duct/distal convoluted tubule (1)  
- more permeable to water (1) (2)  
(12)

3.2

- 3.2.1 (i) C (1) (1)
- (ii) B (1) (1)
- (iii) A (1) (1)
- 3.2.2 (i) C - decreases at the collecting tubule(1)  
since most of the water is reabsorbed(1) (2)
- (ii) B - no glucose present in the collecting tubule(1)  
- all reabsorbed(1) (2)
- (iii) A - will increase as it reaches the tubules(1)  
- since none will be reabsorbed from the tubule(1)  
- and since it is a metabolic waste (1)  
- more of it will be added by tubular secretion (1) into  
tubules (any 2) (2)



- 3.2.3 - like B (1)  
 - all amino acids are reabsorbed (1) (2)
- 3.2.4 - Proteins are large/macromolecules (1)  
 - that cannot filter through (1) the small pores of capillaries/wall of  
 Bowman's capsule. (2)  
**(13)**

**TOTAL QUESTION 3: 25**

**QUESTION 4**

- 4.1.1 A Dendrite (1)  
 B Axon (1)  
 C Cell body (1)  
 D Dendron/dendrite (1)  
 E Interneuron/connector neuron/axon (1)  
 F Receptor (sense organ) (1) (6)
- 4.1.2 (i) Sensory / monopolar/afferent/unipolar neuron (1) Diagram 2 (1) (2)  
 (ii) Motor / multipolar/efferent neuron (1) Diagram 1 (1) (2)
- 4.1.3 (i) Conducts impulses from the connector neuron / spinal cord (1)  
 to the effector/muscle (1)
- OR**
- Links sensory (1) to motor (1) neuron. (2)
- (ii) Conducts impulses from the receptor (1)  
 to the spinal cord/connector neuron (1) (2)
- 4.1.4 - Area where impulses pass (1)  
 - from one neuron to the next (1)
- OR**
- Communication site/area or space (1)  
 - between two neurons (1) (2)
- 4.1.5 Reflex arc / neuron(1) (1)  
**(17)**
- 4.2
- 4.2.1 (i) Hormones (1)  
 (ii) Target organs (1)



4.2.2 Endocrine system / Nervous system (1) (1)

4.2.3

Endocrine system	Nervous system
Operates with bloodstream/ hormones /chemicals(1)	Operates with neurons/ electrochemical (1)
Slow responses (1)	Rapid responses (1)
Response lasts longer(1)	Response short lived (1)
Effect may be widespread(1)	Localised effect (1)

(any 2 x 2 + 1 for table) (5)  
(8)

**TOTAL QUESTION 4: 25**

### QUESTION 5

5.1

5.1.1 Pituitary / hypophysis (1) (1)

5.1.2 At the base of the brain (1) (1)

5.1.3 Stimulates normal growth (1) of the skeleton and muscles of the body (1)

5.1.4 Thyroid (1) (1)

5.1.5 Thyroxin (1) (1)

5.1.6 Regulates metabolic rate/promotes absorption of glucose/conversion  
of glycogen into glucose/accelerates heartbeat/essential for normal  
functioning of the nervous system (1) (1)

5.1.7 Adrenal (1) (1)

5.1.8 At upper end of kidney (1) (1)

5.1.9 Adrenalin (1) (1)  
(9)



## 5.2

- 5.2.1 - Erector/hair muscle (1)  
- Controls position of hair (1) (2)
- 5.2.2 (i) Diagram 1 (1) (1)  
(ii) Diagram 2 (1) (1)
- 5.2.3 - Blood vessels in skin constrict (1) to conserve heat (1) in cold weather  
- hence less blood (1) reaches skin (any 2) (2)
- 5.2.4 - Diagram 2 (1)  
  
- Panting (1) takes place in hot weather  
- and hairs lie flat (1) in hot weather  
- to facilitate loss (1) of body heat (any 2) (3)
- 5.2.5 - Body heat used (1)  
- to bring about evaporation (1) of liquid from tongue  
- also warm liquid leaves (1) body  
- thus cooling (1) down body (any 3) (3)  
(12)
- 5.3
- 5.3.1 (iii)/Has a larger surface area to volume ratio than the elephant (2) (2)
- 5.3.2 - They have a higher metabolic rate (1)  
- to release more heat energy (1) per unit mass than larger animals (2)  
(4)

**TOTAAL QUESTION 5: 25****TOTAL SECTION B: 100****GRAND TOTAL: 150**



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

1.1

1.1.1 B

1.1.2 C

1.1.3 B

1.1.4 D

1.1.5 A

**(5 x 2) (10)**

1.2

1.2.1 Timpanum / trommelvlies / oordrom

1.2.2 Perilimf

1.2.3 Xileem

1.2.4 Guttasie

1.2.5 Kapillariteit

1.2.6 Xerofiete

1.2.7 Diffusie/Osmose

1.2.8 Kutikula / haar (1)

**(8)**

1.3

1.3.1 D

1.3.2 E

1.3.3 A

1.3.4 F

1.3.5 C

**(5 x 2) (10)**



## 1.4

- 1.4.1 Die kwikvlak in die glasbuisie sal hoër wees (1) (1)
- 1.4.2 - Swaar stof (1) om die sterkte van die suigkrag te toon  
 - Meng nie met water nie (1)  
 - Is gekleur (1) vir duidelike waarneming (enige 2) (2)
- 1.4.3 - Sny die takkie onder water (1)  
 om te voorkom dat lug die xileem binnedring (1)  
 - Verbinding moet dig pas (1)  
 om te voorkom dat lug in beweeg wat dit onmoontlik maak vir die kwik  
 om te beweeg (1)  
 - Gebruik 'n skerp mes (1) om takkie af te sny  
 om te voorkom dat die xileemvate beskadig (1) word  
 - Hanteer kwik versigtig (1)  
 omdat dit giftig (1) is (enige 2 x 2) (4)  
 (7)

## 1.5

- 1.5.1 (i) A (1) }  
 C (1) } Merk slegs die eerste 3  
 I/F (1) (3)
- (ii) B (1) }  
 D (1) } Merk slegs die eerste 3  
 G (1) } (3)
- (iii) D (1) }  
 F (1) } Merk slegs die eerste 3  
 K (1) } (3)
- 1.5.2 (i) Oogspier (1) (1)
- (ii) Retina (1) (1)
- 1.5.3 - Kringspiere (1)  
 - trek saam (1)  
 - Radiale spiere (1)  
 - verslap (1)  
 - Pupil word kleiner (1)  
 - minder lig (1) gaan oog binne (enige 4) (4)  
 (15)

TOTAAL VRAAG 1: 50

TOTAAL AFDELING A: 50



**VRAAG 2**

## 2.1

2.1.1 (i) A: Vakuool / selsap (1)

C: Wortelhaar (1) (2)

(ii) B: Skorssel / Parenchium (1) (1)

2.1.2 - Dun / deurlatende selwand (1)

- Groot vakuool (1)

- Groot oppervlakte area (1) (enige 2) (2)

2.1.3 - Die selsap van die wortelhaar het 'n laer (1) waterpotensiaal

- terwyl die omringende grondwater 'n hoër (1) waterpotensiaal het

- Water dring (1) die wortelhaar binne

- deur osmose (1) (4)

(9)

2.2.1 (i) Diagram 2 (1) (1)

(ii) Blare het verlep (1) (1)

(iii) - Transpirasietempo (1)

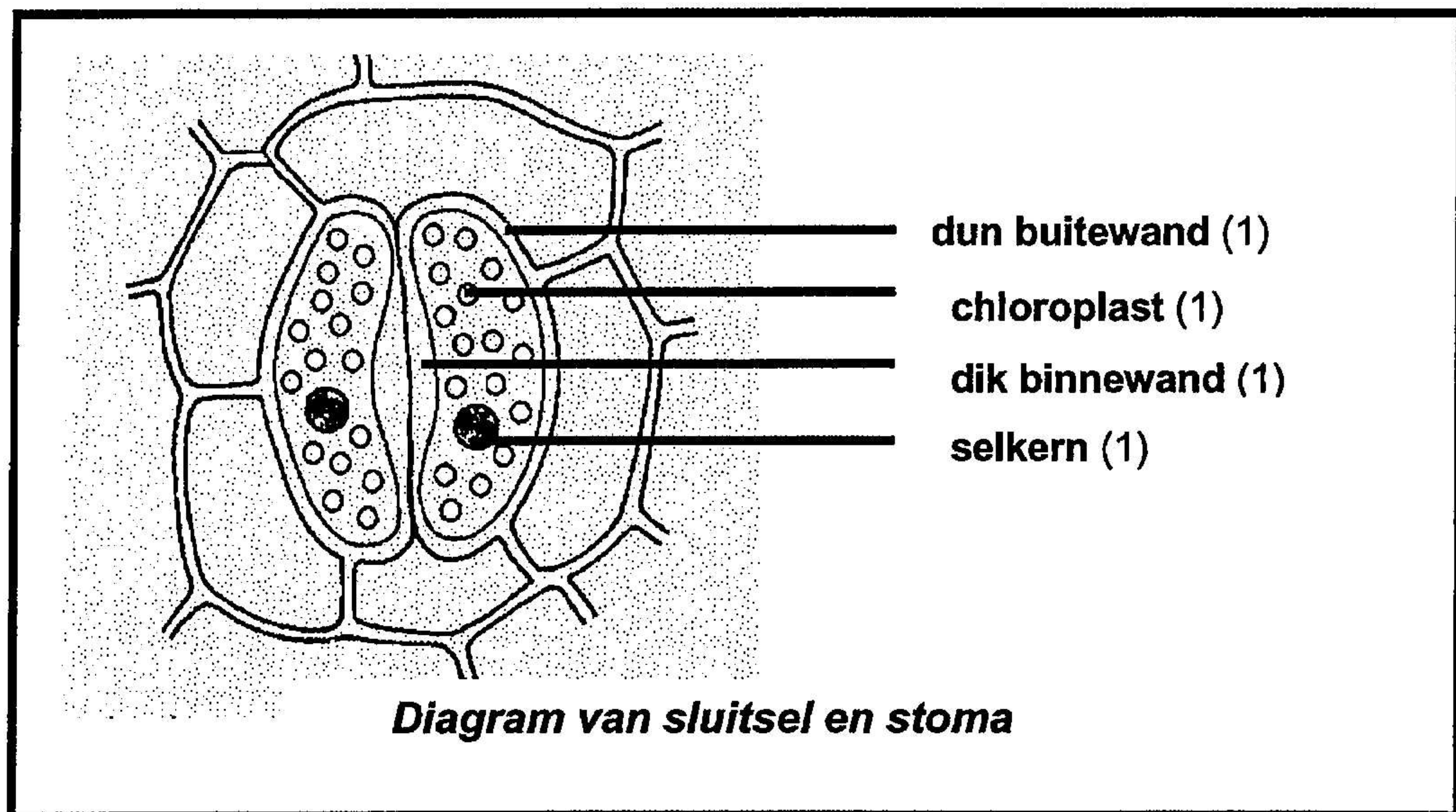
- oorskry die absorpsie van water (1)

- aangesien die temperatuur (1) teen 12:00 hoër is

- en die ligintensiteit (1) is ook hoër (enige 3) (3)



2.2.2



**Kriteria:**

- Porie toe (1)
- Netheid (1)
- Enige drie korrekte byskrifte (3) (5)
- (10)**

2.3

2.3.1 Watermolekules (1) (1)

2.3.2 - Blaas is differensieel deurlatend (1)  
 - porië in die blaas is te klein (1) vir suikermolekules om deur te beweeg (2)

2.3.3 - Osmose (1) het plaasgevind  
 - langs die waterpotensiaalgradiënt (1)  
 - vanaf die beker na die blaas (1) (3)

**(6)**

**TOTAAL VRAAG 2: 25**



**VRAAG 3**

## 3.1

- 3.1.1 In skors (1) (1)
- 3.1.2 Diffusie / glomerulêre / ultra-/ drukfiltrasie (1) (1)
- 3.1.3 Glomerulus / kapillêre bloedvat (1) (1)
- 3.1.4 - Wand bestaan 'n enkel / dun lagie (1)  
om diffusie (1) van stowwe te bevorder  
- Baie klein porieë (1) dien as mikro-filters  
en weerhou deurtog van groot molekules soos proteïene / bloed-  
liggaampies (1) om deur te beweeg  
- Baie kapillêrs (1)  
verseker groot oppervlakte area (1) (enige 2 x 2) (4)
- 3.1.5 Om 'n hoë druk (1) by C te skep. (1)
- 3.1.6 Podosiete (1) (1)
- 3.1.7 ADH (1) (1)
- 3.1.8 - Maak versamelbuis /distale kronkelbuis (1)  
- meer deurlatend vir water (1) (2)  
(12)

## 3.2

- 3.2.1 (i) C (1) (1)
- (ii) B (1) (1)
- (iii) A (1) (1)
- 3.2.2 (i) C - neem af in die versamelbuis(1)  
omdat meeste van die water herabsorbeer (1) word (2)
- (ii) B - Geen glucose kom in die versamelbuis (1) voor nie  
- heeltemal geherabsorbeer (1) (2)
- (iii) A - sal toeneem soos dit die buisies bereik (1)  
- aangesien geen herabsorpsie vanuit buisies plaasvind nie (1)  
- en aangesien dit 'n metaboliese afvalstof is  
- sal meer daarvan deur buisie-sekresie in die buisie gevoeg  
gevoeg word enige 2) (2)



- 3.2.3 - Soos B (1)  
 - alle aminosure word herabsorbeer (1) (2)
- 3.2.4 - Proteïene is groot / makromolekules (1)  
 - wat nie deur die klein porieë van die kapillêres / wand van Bowman se kapsel deurfiltreer (1) nie (2)  
**(13)**

**TOTAAL VRAAG 3: 25**

**VRAAG 4**

- 4.1.1 A Dendriet (1)  
 B Akson (1)  
 C Selliggaam (1)  
 D Dendron/dendriet (1)  
 E Interneuron / verbindingsneuron / akson (1)  
 F Reseptor (sintuigorgaan) (1) (6)
- 4.1.2 (i) Sensoriese / monopolêre / afferente / unipolêre neuron (1)  
 Diagram 2 (1) (2)
- (ii) Motoriese / multipolêre / efferente neuron (1) diagram 1 (1) (2)
- 4.1.3 (i) Gelei impulse vanaf die verbindingsneuron / rugmurg (1)  
 na die effektor / spier (1)

**OF**

- Verbind sensoriese (1) neuron aan motorise (1) neuron (2)
- (ii) Gelei impulse vanaf die reseptor (1)  
 na die rugmurg / verbindingsneuron (1) (2)
- 4.1.4 - Gebied waar impulse vanaf een neuron na die volgende (1)  
 - beweeg (1)

**OF**

- Plek van kommunikasie / gebied of ruimte (1)  
 - tussen twee neurone (1) (2)
- 4.1.5 Refleksboog / neuron (1) (1)  
**(17)**
- 4.2
- 4.2.1 (i) Hormone (1)
- (ii) Teikenorgane (1)



4.2.2 Endokriene-stelsel / Senuweestelsel (1) (1)

4.2.3

Endokriene-stelsel	Senuweestelsel
Werk deur die bloedstroom / hormone / chemikalieë (1)	Werk deur neuron / elektrochemies (1)
Stadige response (1)	Vinnige response (1)
Respons duur langer(1)	Respons is kortstondig (1)
Effek mag wysverspreid wees (1)	Effek is gelokaliseer (1)

(enige 2 x 2 + 1 vir tabel) (5)

(8)

**TOTAAL VRAAG 4: 25**

### VRAAG 5

5.1

5.1.1 Pituitêr / hipofise (1) (1)

5.1.2 Aan die basis van die brein (1) (1)

5.1.3 Stimuleer normale groei (1) van die skelet en liggaamspiere (1) (1)

5.1.4 Tiroïed (1) (1)

5.1.5 Tiroksien (1) (1)

5.1.6 Reguleer metaboliese tempo / bevorder absorpsie van glukose / omskakeling van glikogeen na glucose / versnel hartklop / noodsaaklik vir normale funksionering van die senuweestelsel (1) (1)

5.1.7 Bynier (1) (1)

5.1.8 Aan die bopunt van die nier (1) (1)

5.1.9 Adrenaliën (1) (1)

(9)



## 5.2

- 5.2.1 - Erektor- / haarspier (1)  
 - Beheer posisie van die haar (1) (2)
- 5.2.2 (i) Diagram 1 (1) (1)  
 (ii) Diagram 2 (1) (1)
- 5.2.3 - Bloedvate in vel vernou (1) om hitte te behou (1) in koue weer  
 - gevolglik bereik minder bloed (1) die vel (enige 2) (2)
- 5.2.4 - Diagram 2 (1)  
 - Hyging (1) vind in warm weer plaas  
 - en hare lê plat (1) in warm weer  
 - om die verlies (1) van liggaamshitte te bevorder (enige 2) (3)
- 5.2.5 - Liggaamshitte gebruik (1)  
 - om verdamping (1) van vloeistof vanaf die tong teweeg te bring  
 - ook verlaat warm vloeistof (1) die liggaam  
 - om sodoende die liggaam af te koel (1) (enige 3) (3)
- (12)**

## 5.3

- 5.3.1 (iii) - Het 'n groter oppervlakarea tot volume-verhouding as die olifant (2) (2)
- 5.3.2 - Hulle het 'n hoër metaboliese tempo (1)  
 - om meer hitte energie (1) per eenheidsmassa as groter diere vry te stel (2)  
**(4)**

**TOTAAL VRAAG 5: 25**

**TOTAAL AFDELING B: 100**

**GROOTTOTAAL: 150**