

## SENIOR CERTIFICATE EXAMINATION 2004

## SECTION A

## Question 1

1.1

1.1.1 C✓✓

1.1.2 D✓✓

1.1.3 B✓✓

1.1.4 B✓✓

1.1.5 C✓✓

1.1.6 A✓✓

(6 x 2) (12)

1.2

1.2.1 Apical dominance✓

1.2.2 Guttation✓

1.2.3 Hormones/(Plant) growth substances✓

1.2.4 Capillarity / Capillary action✓

1.2.5 Feedback ✓ (Homeostasis)

1.2.6 Ectothermic/Ectotherms✓ (Poikilothermic)

1.2.7 Gular fluttering✓

1.2.8 Tropism ✓ (Tropic movements)

(8)

1.3

1.3.1 A and B /Both/A+B✓✓

1.3.2 A only/A✓✓

1.3.3 B only /B✓✓

1.3.4 B only /B✓✓

1.3.5 A and B /Both/ A+B ✓✓

1.3.6 B only /B✓✓

(6 x 2) (12)

1.4

1.4.1 (i) (To illustrate)transpiration pull/ suction force of transpiration✓

(1)

(ii) (To demonstrate) root pressure✓

(1)

1.4.2

- Rubber tube must fit tightly ✓ around plant stem and glass tube to prevent air from entering/water from escaping ✓
- Soil must be moist enough ✓ to increase availability of water ✓ to plant
- Pour water into the glass tube ✓ to prevent the stem from drying out ✓
- Add a drop of paraffin/oil to the water in the glass tube ✓ to prevent evaporation of water ✓
- Use sharp knife/ cut the stem at an angle✓ to prevent damage to the xylem ✓
- Cut the stem a few cm above the ground surface✓ to allow for attachment of the rubber tubing/to avoid the effect of capillarity✓
- Mark the original level of the water✓ to detect any further changes✓

Mark first 2 only (2 x 2)

(4)

SENIOR CERTIFICATE EXAMINATION 2004

- 1.4.3 (i) 4✓ (1)  
 (ii) 3✓ (1)
- 1.4.4 (i) C✓ (A or B accepted since question did not specifically state "upward movement") (1)  
 (ii) F✓ (D or E accepted as for above reason) (1)
- (10)**
- 1.5
- 1.5.1 rapid ✓  
 automatic/without involvement of the brain/ involuntary ✓ response to a stimulus (2)
- 1.5.2 - Muscle/effector organ ✓  
 - causes reaction/response of the body /contraction or relaxation of muscle ✓ (2)
- 1.5.3 - The impulse will be received by the spinal cord/person will feel sensation ✓  
 - but impulse will not be transmitted to the motor neuron ✓  
 - and the person will not react / no motor action ✓ (3)
- (7)**
- 1.6
- 1.6.1 37,6 – 37,62 ✓°C ✓ (2)
- 1.6.2 Internal body temperature dropped ✓ to about 37°C and then increased ✓ to the original temperature of about 37,6°C (2)
- 1.6.3 Credit all learners with 2 marks **(Since question did not specify internal body temperature)** (2)
- 1.6.4 (i) decreases ✓ in the beginning  
 (ii) decreases ✓ in the beginning (2)
- 1.6.5
- heat is transferred ✓
  - from blood in skin ✓
  - to cold water ✓
- OR**
- blood vessels in skin constrict ✓
  - less blood flows through the skin ✓
  - hence less heat reaches the skin ✓
- (3)**  
**(11)**

**Total Question 1: 60**

**TOTAL SECTION A: 60**

**SECTION B**

**QUESTION 2**

2.1

2.1.1 Osmosis ✓ (1)

2.1.2 (i) cell sap / cytoplasm / hyaloplasm / cytosol ✓ (1)

(ii) cell membrane/ tonoplast ✓ (1)

2.1.3 (i) Potato in distilled water has a greater ✓✓ mass than potato in solution A

**OR**

Potato in solution A will have smaller mass ✓✓ than potato in distilled water (2)

(ii)

- Potato in distilled water will absorb more water ✓
- since the water potential gradient is steeper ✓
- because distilled water is hypotonic to/has a higher water potential than solution A. ✓

**OR**

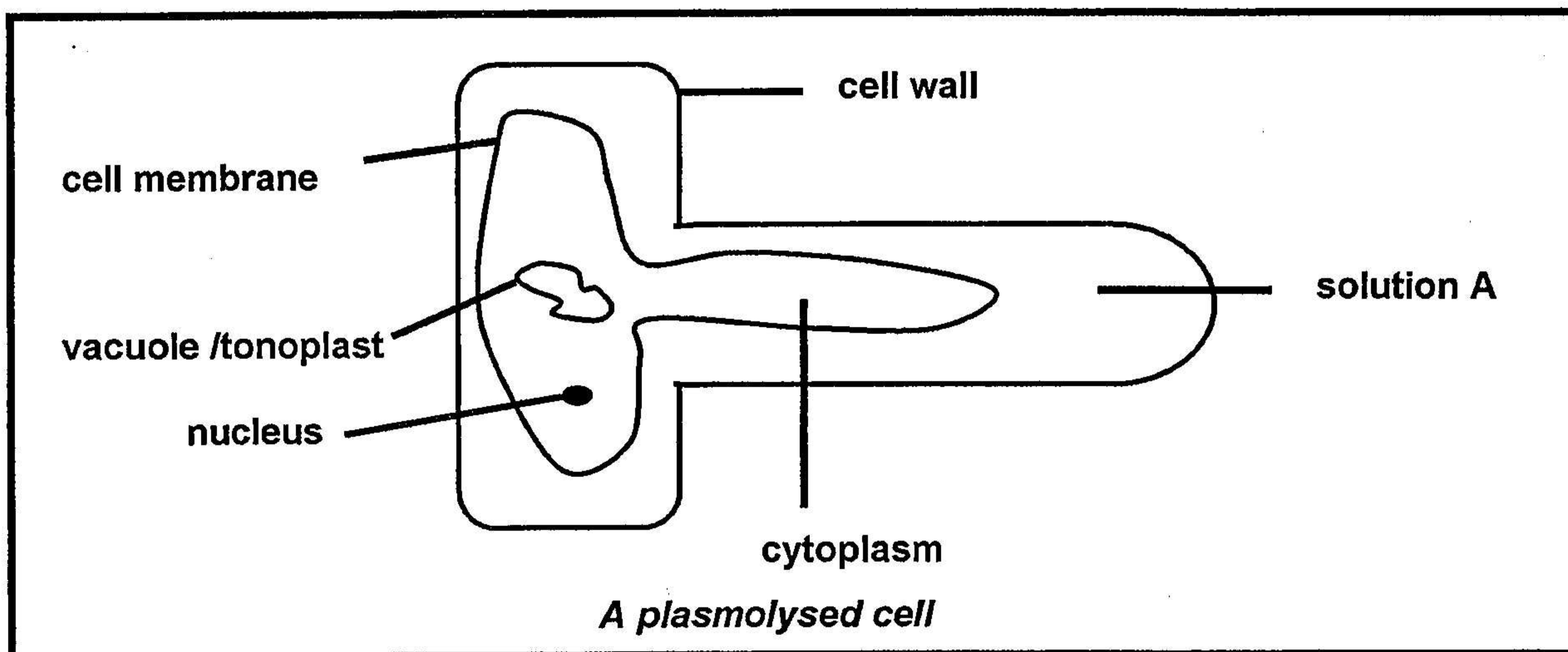
- Potato in solution A will lose water/ absorb less water ✓
- since the water potential gradient is less steep ✓
- because solution A is hypertonic to/has a lower water potential than distilled water. ✓

**OR**

- Potato in solution A not experience a net gain or loss of water ✓
- Due to the absence of a water potential gradient ✓
- because solution A is isotonic to /has the same water potential as the potato. ✓

(3)

2.1.4



**Criteria**

- Drawing of root hair ✓
- Caption ✓
- Vacuole drawn smaller ✓
- Space between cell wall and cell membrane ✓
- Any 4 labels ✓✓✓✓

(8)

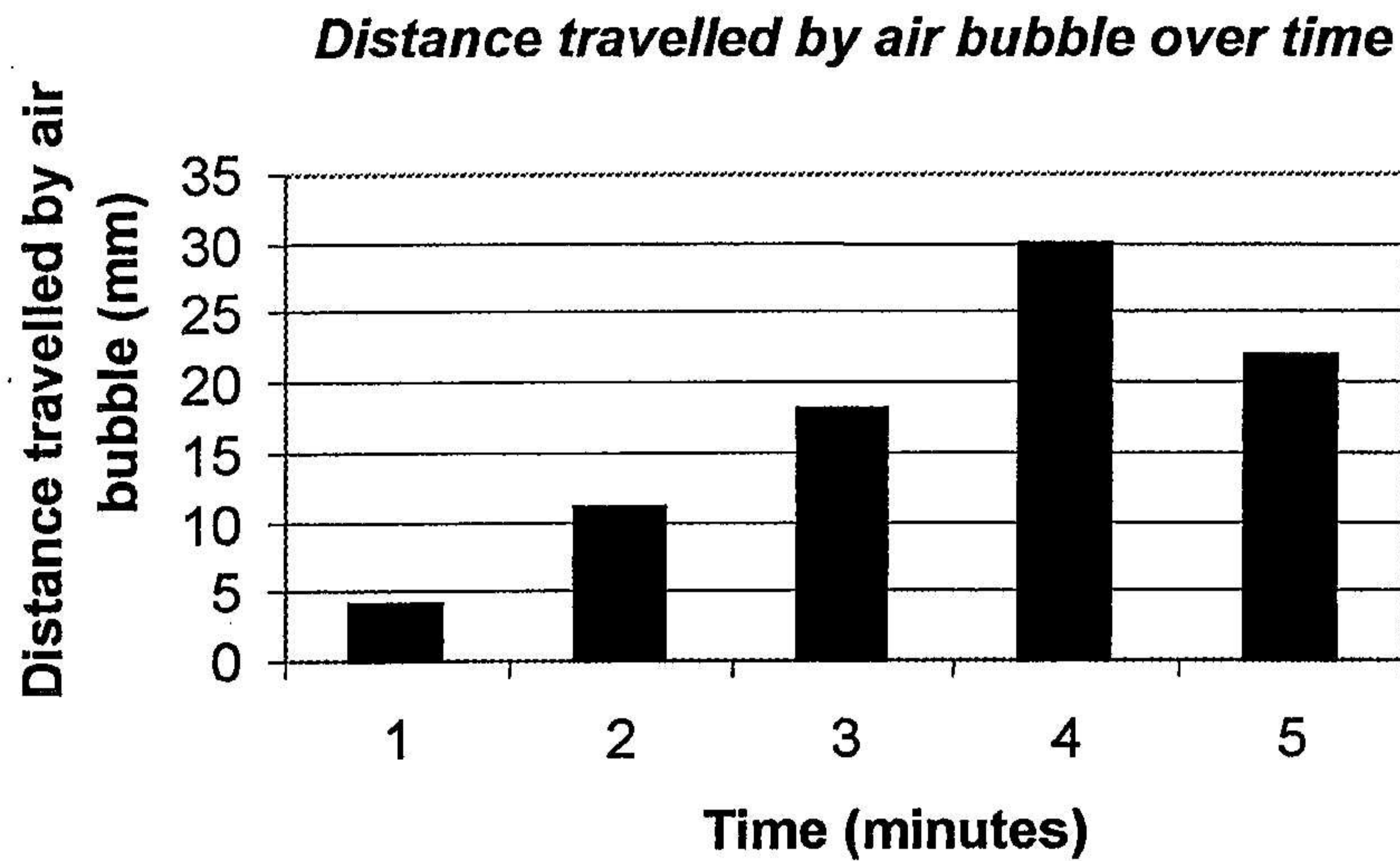
(16)

2.2

2.2.1 Potometer ✓ (1)

2.2.2  $11\text{mm} \times 4\text{mm}^2 \checkmark = 44 \checkmark \text{mm}^3 \checkmark$  (3)

2.2.3



Correct type of graph	1			
Title of graph	1			
Correct choice and label for X-axis	1			
Correct choice and label for Y-axis	1			
Correct units for X-axis	1			
Correct units for Y-axis	1			
Appropriate scale for X-axis	1			
Appropriate scale for Y-axis	1			
Drawing of bars	3 : draws all the bars correctly	2 : draws 3 or 4 of the bars correctly	1 : draws 1 or 2 of the bars correctly	0 : no bars drawn/drawn incorrectly

Wrong type of graph drawn : marks lost for "correct type of graph" as well as for drawing of bars.

(11)

2.2.4 In the fifth ✓ minute (1)

2.2.5

- humidity increased ✓
  - because water vapour cannot escape ✓
  - therefore lowering the gradient for transpiration ✓
- (3)  
(19)

**TOTAL QUESTION 2 : 35**

**QUESTION 3**

3.1

- 3.1.1 D: Renal vein ✓  
 E: (Renal) pelvis ✓  
 F: (Renal) calyx ✓ (3)

**NOTE: From 2005 the prefix “renal” must be given**

- 3.1.2 B contains the glomeruli✓✓/more capillaries✓✓/Malpighian bodies ✓✓  
**OR**  
 C contains no glomeruli✓✓/ Malpighian bodies✓✓/fewer capillaries✓✓ (2)

3.1.3

- (Renal) capsule ✓
- Protects ✓inner parts of kidney (2)

- 3.1.4 To keep kidney in place / protects kidney against injury /shock absorber/  
 insulates the kidney ✓ (1)

3.1.5

- Urine will not be able to leave renal pelvis/kidney ✓
- causing swelling ✓of the kidney tissue
- and an accumulation of fluid ✓in the renal tubules
- that will cause a decrease in the flow rate ✓of fluid in renal tubules
- which in turn will cause a decrease in the pressure gradient ✓in the nephrons/Malpighian bodies
- Renal failure/kidney malfunctioning may result ✓
- Infection may also result ✓ any (5)

**(13)**

3.2

- 3.2.1 Malpighian body/renal tubule ✓ (1)

- 3.2.2 (i) Renal artery /afferent✓ arteriole  
 • transports blood with waste ✓ (2)

- (ii) Afferent ✓ and efferent ✓ arterioles/glomerulus✓✓  
 • creates pressure ✓ (3)

- (iii) Glomerulus/capillary network ✓  
 • responsible for removal of waste ✓ (2)

- 3.2.3 Organic: glucose / amino acids/vitamins ✓ **Mark first 1 only**  
 Inorganic: water / salts(examples of salts) ✓ **Mark first 1 only** (2)

3.2.4

- Presence of useful substances ✓
- at the same concentration as that of the blood ✓
- prevents diffusion of these into the dialysis fluid ✓
- thus preventing their loss ✓ from the body
- absence of urea ✓
- allows urea to diffuse out of blood ✓ to be removed

any (5)

3.2.5 Human body temperature/ accept any answer from 36 °C to 37 °C ✓ (1)

3.2.6 Accept any answer that falls within the range of 6 to 18 ✓✓  
(No mark for unit, because it is mentioned in Q) (2)

3.2.7

- To allow enough time ✓
- to remove metabolic wastes ✓
- to regulate the water content of the body ✓
- to regulate the pH ✓
- and to regulate the salt content of the body ✓
- since body is constantly metabolising ✓

any (4)  
(22)

**TOTAL QUESTION 3: 35**

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**QUESTION 4**

4.1

4.1.1

- Both are transparent ✓  
to allow light to pass through ✓
- Both have curved/convex surfaces ✓  
to refract/bend light ✓

**Mark first 2 only** 2x2 (4)

4.1.2

- Is vascularised/has blood vessels ✓  
to transport ✓ substances to and from the eye
- Is pigmented /darker ✓  
to prevent internal reflection ✓ of light

**Mark first 2 only** 2x2 (4)

4.1.3

- C ✓
- iris ✓

(2)

4.1.4

- circular muscles will relax ✓
  - radial muscles will contract ✓
  - causing the pupil to dilate ✓
- (3)

4.1.5

- Eyelashes ✓
  - Eyebrows ✓
  - Bony socket ✓
  - Lacrimal glands ✓
  - Eyelid ✓
  - Fat ✓
- Mark first 2 only** (2)

4.1.6

- 3 ✓
- Image will be very clear ✓
  - because light is focused on the fovea /yellow spot ✓
  - which has the highest concentration of cones ✓ any (2)

**OR**

- 1 ✓
- Image will be less clear ✓
  - because light is not focused directly on the fovea /yellow spot ✓
  - which has the highest concentration of cones ✓ any (2) (3)

**NOTE : ( alternative answers have been provided since the position of label G varied between papers printed in different provinces)**

4.1.7

- Blind spot ✓
- No image formed ✓
- because of absence ✓ of photoreceptors (3)

4.1.8

- Remains clear/unchanged ✓
  - since the eye will bring about accommodation/lens becomes less convex ✓
  - to focus the light ✓ on the fovea/yellow spot (3)
- (24)**

4.2

4.2.1 (i)

- Traps dust ✓
- Prevents insects/small animals from entering ear ✓
- Keeps eardrum moist ✓ **Mark first 2 only** (2)

(ii)

- Hearing will worsen/deafness may result ✓ because
- plug will hamper free movement of tympanic membrane ✓
- and weaker/no sound waves will be transferred ✓ (3)

4.2.2 (i) Yes **or** No ✓ (1)

(ii) air in cavity ✓  
conducts sound waves ✓ **or** sound will not be transmitted ✓  
from the tympanum/to  
the anvil ✓ (2)

4.2.3 Cerebellum ✓

- Nerve E links part with receptors for balance ✓ to the brain
  - cerebellum co-ordinates ✓ balance
- (3)

(11)

Total Question 4: 35

TOTAL SECTION B: 105

## SECTION C

### Question 5

5.1

5.1.1 Diagram 3 ✓ (1)

5.1.2

- Hair stands erect ✓
  - when a person is frightened / in reaction to an emergency / as a result of the effect of adrenalin ✓
- (2)

5.1.3

- Erector/hair muscle ✓
  - Controls ✓ position of hair
- (2)

5.1.4

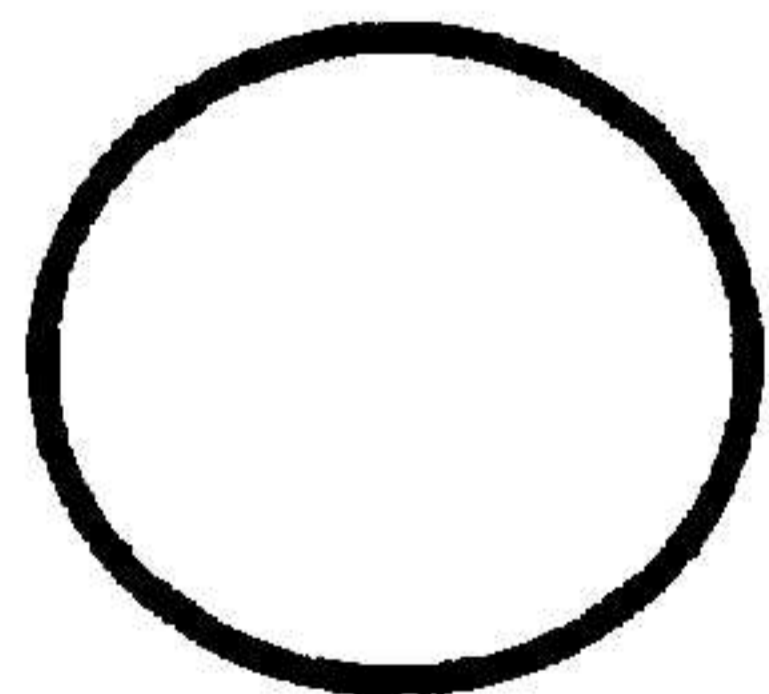


Diagram 2

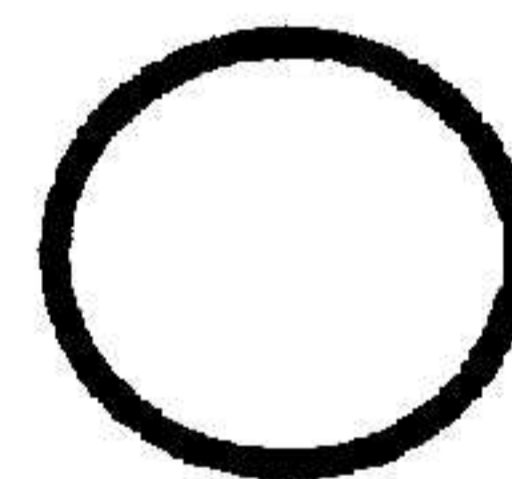


Diagram 3

Cross section ✓ (1)

Correct captions on both diagrams ✓ (1)



5.1.5 Person Y ✓ (1)

- sweat glands are less active ✓
- because of decreased blood supply ✓
- less sweat produced ✓
- thus less water lost as sweat ✓
- less water now reabsorbed by kidney/more water lost in urine ✓  
and the urine becomes dilute any (4) (5)

5.1.6 Thyroxin or Glucagon ✓ (1)

- |  |  |  |
|--|--|--|
| <p>5.1.7 - Controls metabolic rate ✓<br/>- Higher metabolic rate required ✓<br/>- to provide more energy ✓<br/>- for action ✓ required</p> |  | <p>- Converts glycogen ✓<br/>- to glucose ✓<br/>- to provide more energy ✓<br/>- for action ✓ required</p> |
| (4)<br>(17)  |  |  |

5.2

- Person in an emergency situation/ is in shock/when frightened ✓
- that lowers blood sugar level ✓
- which stimulates adrenal gland ✓ to secrete adrenalin
- that inhibits insulin ✓ secretion
- but stimulates glucagon ✓ secretion
- which is transported to the liver and skeletal muscles by the blood ✓
- to convert excess glycogen to glucose ✓
- adrenalin causes the bronchi to dilate ✓
- to increase ventilation ✓
- and also the constriction of the skin capillaries ✓
- and the person becomes pale ✓
- less blood flows to the intestine ✓
- because blood flow is diverted to heart muscles ✓
- and the skeletal muscles/ and brain ✓
- adrenalin increases the rate and depth of breathing ✓
- heartbeat increases ✓
- and blood pressure also increases ✓
- so that more oxygen and glucose ✓
- can be transported to skeletal muscles ✓
- more energy becomes available/increases respiration/metabolism ✓
- allowing rapid removal of CO<sub>2</sub>/waste ✓
- hair stands on end ✓
- pupil dilates ✓ any (15)

Marks for synthesis will should be allocated as follows :

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**

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## SENIOR-SERTIFIKAAT-EKSAMEN 2004

## AFDELING A

## VRAAG 1

## 1.1

- 1.1.1 C✓✓
- 1.1.2 D✓✓
- 1.1.3 B✓✓
- 1.1.4 B✓✓
- 1.1.5 C✓✓
- 1.1.6 A✓✓

(6 x 2) (12)

## 1.2

- 1.2.1 Apikale dominansie/Apikale oorheersing✓
- 1.2.2 Guttasie✓
- 1.2.3 Hormone/(Plant)groeistowwe✓
- 1.2.4 Kapillariteit /kapillêre aksie✓
- 1.2.5 Terugvoer/(negatiewe) terugkoppeling(Homeostase) ✓
- 1.2.6 Ektotermies (e) ✓(Poikilotermies)
- 1.2.7 Gulaartrilling/keelfladdering/keeltrilling/keelbewing/keelvibrasie✓
- 1.2.8 Tropisme ✓(Tropiese beweging)

(8)

## 1.3

- 1.3.1 A en B✓✓/Beide/A+B
- 1.3.2 A alleen✓✓/A
- 1.3.3 B alleen✓✓/B
- 1.3.4 B alleen✓✓/B
- 1.3.5 A en B✓✓/Beide /A+B
- 1.3.6 B alleen✓✓/B

(6 x 2)(12)

## 1.4

- 1.4.1 (i) Om suigkrag/trekkrag van transpirasie✓ (te illustreer) (1)
- (ii) Om worteldruk✓ (te illustreer) (1)
- 1.4.2 - Rubberbuis moet dig sluit ✓ om die plantstingel en glasbuis om lug te verhoed om in te kom/water om te ontsnap ✓
- Grond moet vogtig genoeg wees ✓
- om die beskikbaarheid van water aan die plant te verhoog ✓
- Gooi water in die glasbuis ✓
- om uitdroging van die stingel te voorkom ✓
- Voeg 'n druppel paraffien/olie by die water in die glasbuis ✓
- om verdamping van water te verhoed ✓
- Gebruik skerp mes/sny stingel met 'n hoek ✓
- om beskadiging van die xileem te voorkom ✓
- Sny die stingel 'n paar cm bokant die grondoppervlak ✓
- vir die aanhegting van die rubberbuis/om kapillariteit te verhoed ✓
- Merk die oorspronklike vlak van water ✓
- om enige verdere veranderings te noteer ✓

(enige 2 x 2) (4)

- 1.4.3 (i) 4✓ (1)  
 (ii) 3✓ (1)
- 1.4.4 (i) C ✓ (A/B a.g.v bewoording van vraag wat nie verwys na opwaartse beweging van water nie) (1)  
 (ii) F ✓ (D/E vir dieselfde rede as bo) (1)  
**(10)**
- 1.5
- 1.5.1 Vinnige ✓  
 outomatiese/onwillekeurige/reaksie op 'n stimulus/sonder die betrokkenheid van die brein ✓ (2)
- 1.5.2 - Spier/effektororgaan ✓  
 - wat 'n reaksie/respons/spier trek saam of verslap ✓ (2)
- 1.5.3 - Die impuls sal deur die rugmurg ontvang word/sal gevoel word ✓  
 - maar nie na die motorneuron gelei word nie ✓ (3)  
 - en die effektor sal nie reageer nie/geen motoriese aksie ✓ (7)
- 1.6
- 1.6.1 37,6 – 37,62 ✓ °C ✓ (2)
- 1.6.2 Interne liggaamstemperatuur daal ✓ tot ongeveer 37°C en styg dan ✓ tot die oorspronklike temperatuur van ongeveer 37,6°C (2)
- 1.6.3 Gee alle kandidate 2 punte ✓✓ (2)  
**(Vraag het nie interne liggaamstemperatuur gespesifiseer nie)**
- 1.6.4 (i) neem af ✓ in die begin  
 (ii) neem af ✓ in die begin (2)
- 1.6.5 - hitte is oorgedra ✓  
 - van die bloed in die vel ✓  
 - na koue water ✓
- OF**
- bloedvate in die vel trek saam ✓  
 - minder bloed vloei deur die vel ✓  
 - gevolglik bereik minder hitte die vel ✓ (3)  
**(11)**

**TOTAAL VRAAG 1: 60**  
**TOTAAL AFDELING A: 60**

**AFDELING B**

**VRAAG 2**

2.1

2.1.1 Osmose ✓ (1)

2.1.2 (i) selsap/sitoplasma/hialoplasma/sitosol ✓ (1)

(ii) selmembraan/tonoplas ✓ (1)

2.1.3 (i) - Aartappel in gedistilleerde water het 'n groter ✓✓ gewig as aartappel in oplossing A

**OF**

- Aartappel in oplossing A het 'n kleiner gewig ✓✓  
- as die aartappel in gedistilleerde water (2)

(ii) - Aartappel in gedistilleerde water sal meer water absorbeer ✓  
- omdat die waterpotensiaalgradient groter is ✓  
- omdat gedistilleerde water hipotonies is tot oplossing A/het 'n hoër waterpotensiaal as oplossing A ✓

**OF**

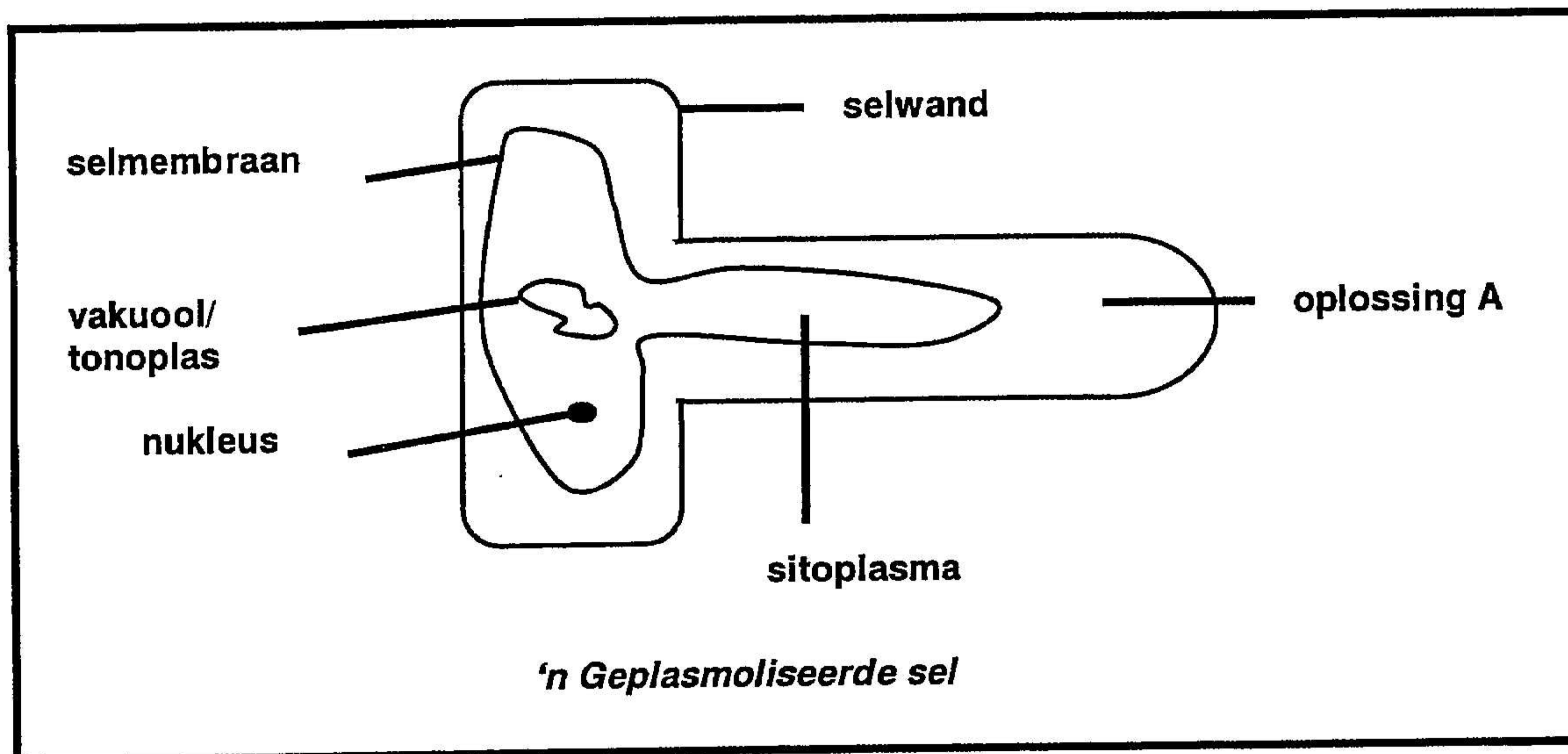
-Aartappel in oplossing A sal meer water verloor/minder absorbeer ✓  
- omdat die waterpotensiaalgradient kleiner is ✓

-omdat oplossing A hipertonies is tot gedistilleerde water/omdat oplossing A 'n laer waterpotensiaal het as gedistilleerde water ✓

**OF**

- Aartappel in oplossing A ondergaan nie 'n netto opname of verlies in water nie ✓  
- vanweë die afwesigheid van 'n waterpotensiaalgradient ✓  
- omdat oplossing A isotonies is tot die aartappel/ omdat oplossing A dieselfde waterpotensiaal het as die aartappel ✓ (3)

2.1.4



**Kriteria**

- Tekening van wortelhaar ✓
- Opskrif ✓
- Vakuool kleiner geteken ✓
- Spasie tussen selwand en selmembraan ✓
- Enige vier byskrifte ✓✓✓✓

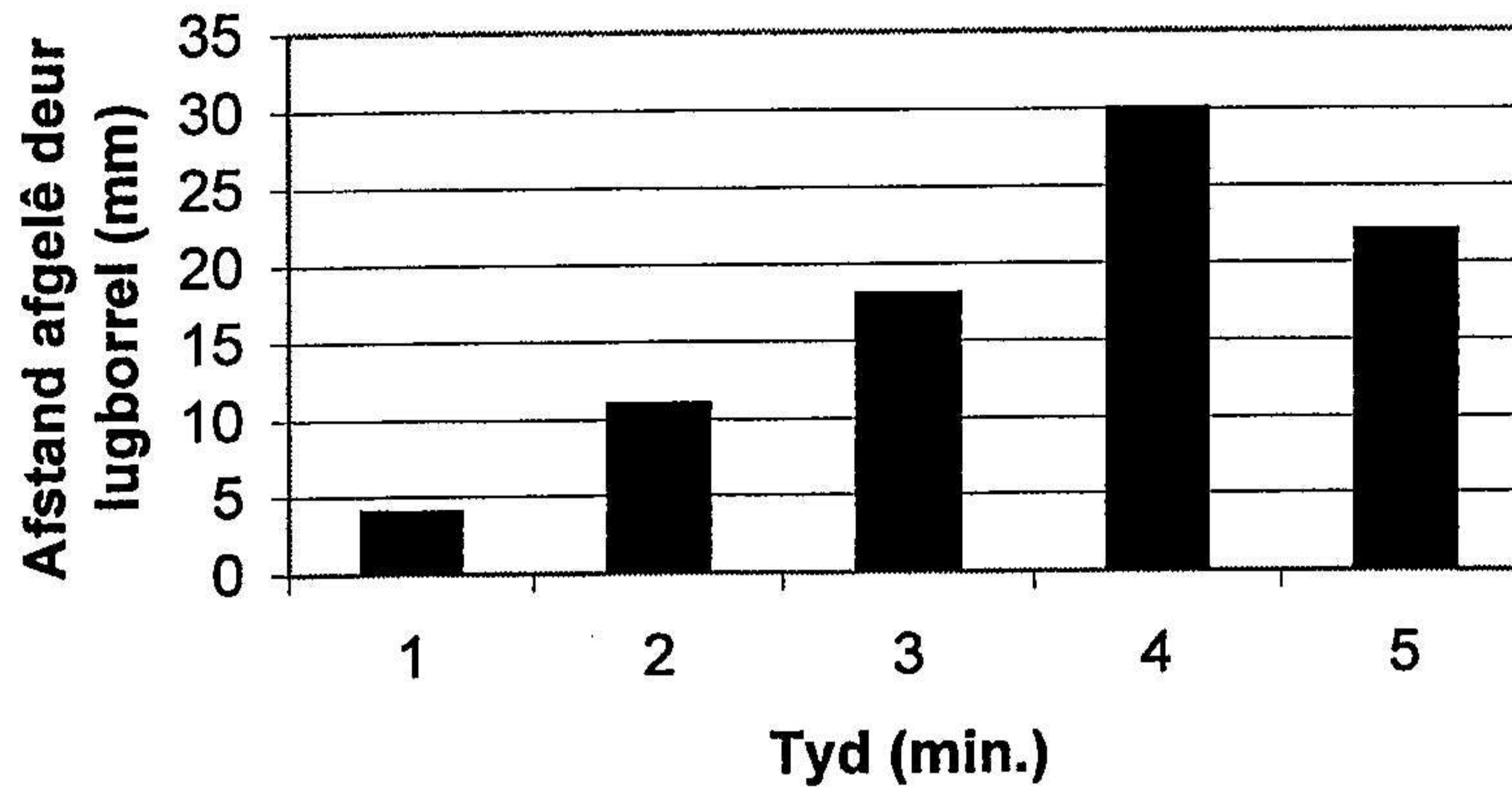
(8)  
(16)

2.2

2.2.1 Potometer ✓ (1)

2.2.2  $11\text{mm} \times 4\text{mm}^2 \checkmark = 44 \checkmark \text{mm}^3 \checkmark$  (3)

2.2.3 **Kolomgrafiek: Afstand deur lugborrel afgelê oor tyd**



Korrekte tipe grafiek	1			
Titel van grafiek	1			
Korrekte keuse en byskrifte vir X-as	1			
Korrekte keuse en byskrifte vir Y-as	1			
Korrekte eenhede vir X-as	1			
Korrekte eenhede vir Y-as	1			
Toepaslike skaal vir X-as	1			
Toepaslike skaal vir Y-as	1			
Tekening van kolomme	3: teken al die kolomme korrek	2: teken 3 of 4 van die kolomme korrek	1: teken 1 of 2 van die kolomme korrek	0: Geen kolomme korrek geteken nie

Verkeerde tipe grafiek geteken: verloor punte vir "korrekte tipe grafiek" asook vir tekening van kolomme (11)

2.2.4 In die vyfde ✓ minuut (1)

2.2.5 - Die humiditeit neem toe ✓  
 - omdat waterdamp nie kan ontsnap nie ✓  
 - dus 'n verlaging in die transpirasie-gradient ✓ (3)

(19)

**TOTAAL VRAAG 2:35**

**VRAAG 3**

3.1

- 3.1.1 D: Nieraar ✓  
 E: (Nier)bekken/pelvis ✓  
 F: (Nier)kelk ✓ (3)
- (Van 2005 is die woord tussen hakies verpligtend.)**
- 3.1.2 - B bevat die glomerulus /meer bloedhaarvaatjies/Malpighi liggaampies✓✓  
**OF**  
 - C bevat geen glomerulus/Malpighi liggaampies nie/  
 minder bloedhaarvaatjies✓✓ (2)
- 3.1.3 - (Nier)kapsel ✓  
 - Beskerm ✓ binneste dele van die nier (2)
- 3.1.4 - Om die nier in plek te hou/beskerm die nier teen beserings/absorbeer  
 skokke/isolering van die nier✓ (1)
- 3.1.5 - Urien sal nie die nierpelvis/nier verlaat nie ✓  
 - wat 'n swelling ✓ van die nierweefsel  
 - en versameling van vloeistof ✓ in die nierbuisies sal veroorsaak  
 - wat 'n afname in die vloeitempo ✓ van vloeistof in die nierbuisies tot  
 gevolg het  
 - wat op sy beurt 'n afname in die drukgradiënt tot gevolg het ✓  
 in die nefron/Malpighi-liggaampies  
 - lei tot nierversaking/funksies van nier sal nie plaasvind nie ✓  
 - infeksie kan voorkom ✓ (enige 5) (5)  
**(13)**
- 3.2
- 3.2.1 Malpighi-liggaampie/nierbuisies ✓ (1)
- 3.2.2 (i) Nierslagaar/afferente✓ arteriool/toevoerende slagaartjie  
 - vervoer bloed met afvalstowwe ✓ (2)
- (ii) Afferente ✓ en efferente ✓ arteriole/glomerulus ✓✓  
 - veroorsaak druk ✓ (3)
- (iii) Glomerulus/kapillêre netwerk ✓  
 - verantwoordelik vir die verwydering van  
 afvalstowwe ✓ (2)
- 3.2.3 Organies: glukose/aminosure/vitamiene ✓ **(Merk slegs eerste een)**  
 Anorganies:water/soute(of voorbeelde van ione) ✓  
**(Merk slegs eerste een)** (2)
- 3.2.4 - Teenwoordigheid van bruikbare stowwe ✓  
 - van dieselfde konsentrasie as die van die bloed ✓  
 - verhoed diffusie van hierdie stowwe na die dialise-vloeistof ✓  
 - verhoed dus hulle verlies ✓ uit die liggaam  
 - Afwesigheid van ureum ✓  
 - laat ureum uit die bloed diffundeer ✓ om verwyder te word (enige 5)(5)



- 3.2.5 Liggaamstemperatuur van die mens/enige temperatuur tussen 36 °C en 37 °C ✓ (1)
- 3.2.6 Aanvaar enige antwoord tussen 6 tot 18 ✓✓ (Geen punt vir eenheid want dit word in die vraag genoem.) (2)
- 3.2.7 - Om genoeg tyd toe te laat ✓  
- om metaboliese afvalstowwe te verwyder ✓  
- om waterinhoud van die liggaam te reguleer/osmoregulering ✓  
- om pH te reguleer ✓  
- en om die soutinhoud van die liggaam te beheer ✓  
- die liggaam is voortdurend besig met metabolisme ✓
- (enige 4) (4)  
(22)

**TOTAAL VRAAG 3:35**

**VRAAG 4**

4.1

- 4.1.1 - Beide is deurskynend ✓  
om lig deur te laat ✓  
- beide het bolvormige/konvekse oppervlaktes ✓  
om lig te breek/buig ✓ (Merk slegs eerste 2) (2x2) (4)
- 4.1.2 - Is bloedvatryk/besit bloedvate ✓  
om stowwe na en van die oog te vervoer ✓  
- Is gepigmenteerd/donker ✓  
om interne weerkaatsing van lig ✓ te verhoed (Merk slegs eerste 2) (2x2) (4)
- 4.1.3 - C ✓  
iris ✓ (2)
- 4.1.4 - kringspiere sal verslap ✓  
- radiaalspiere trek saam ✓  
- sal die pupil laat verwyd ✓ (3)
- 4.1.5 - Oogwimpers ✓  
- Wenkbroue ✓  
- Benige holte ✓  
- Traankliere ✓  
- Ooglid ✓  
- Vetweefsel ✓ (Merk slegs eerste 2) (2)

- 4.1.6 - **3** ✓ (1)  
 - beeld sal duidelik wees ✓  
 - omdat lig gefokus is op die geelvlak/fovea ✓  
 - wat die hoogste konsentrasie keeltjies het ✓ (enige 2) (2)
- OF**
- 1** ✓ (1)  
 - Beeld sal minder duidelik wees  
 - omdat lig nie direk is op die geelvlak/fovea gefokus is nie ✓  
 - wat die hoogste konsentrasie keeltjies het ✓ (enige 2) (2)  
**(posisie van byskriflyn G nie dieselfde in alle vraestelle nie)**
- 4.1.7 - Blindevlak ✓  
 - Geen beeld gevorm nie ✓  
 - vanweë afwesigheid ✓ van fotoreseptors (3)
- 4.1.8 - Bly helder/onveranderd ✓  
 - omdat die oog akkomodasie veroorsaak/lens word minder konveks ✓  
 - om lig te fokus ✓ (3)  
**(24)**
- 4.2
- 4.2.1 (i) - Vang stofdeeltjies op ✓  
 - Verhoed insekte/of klein diertjies om die oor binne te gaan ✓  
 - Hou die oordrom vogtig ✓ **(Merk slegs eerste 2)** (2)
- (ii) - Gehoor sal verswak/doofheid ✓ omdat  
 - die prop vrye beweging van die timpanum verhoed ✓  
 - en swakker klankgolwe/geen sal oorgedra word ✓ (3)
- 4.2.2 (i) - Ja ✓ (1)
- (ii) - lug in holte ✓ gelei klankgolwe ✓ (2)  
**OF**
- (i) -Nee ✓ (1)
- (ii) klankgolwe word nie oorgedra ✓ van die timpanum/na die aambeeld ✓ (2)
- 4.2.3 - Serebellum ✓  
 - Senuwee E verbind reseptors vir balans ✓ met die brein  
 - serebellum koördineer balans ✓ (3)  
**(11)**

**TOTAAL VRAAG 4 : 35**

**TOTAAL AFDELING B: 105**

**AFDELING C**

**VRAAG 5**

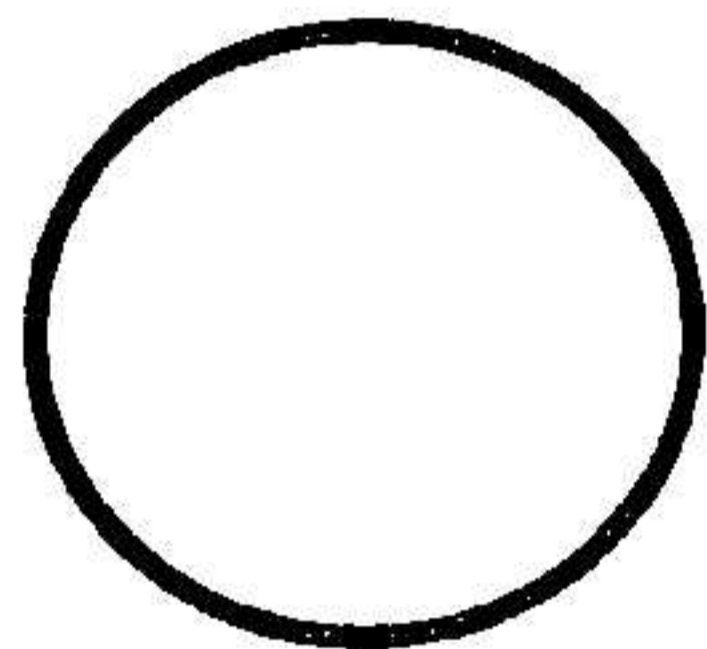
5.1

5.1.1 Diagram 3 ✓ (1)

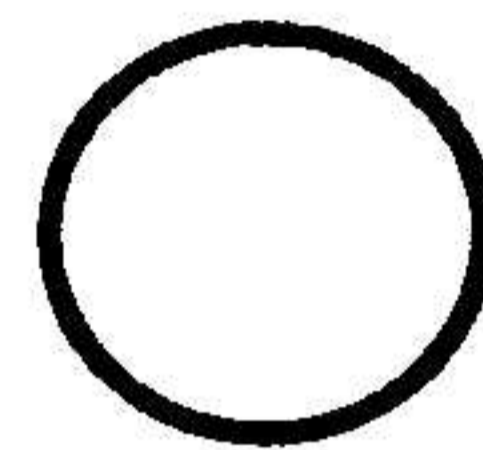
5.1.2 - hare staan orent ✓  
 - wanneer persoon skrik/in reaksie op noodgeval/as gevolg van die invloed op adrenalien ✓ (2)

5.1.3 - Erektor/haarspier ✓  
 - Beheer ✓ posisie van haar (2)

5.1.4



**Diagram 2**



**Diagram 3**

Dwarssnee: ✓ (1)

Korrekte opskrifte vir beide diagramme ✓ (1)

5.1.5 - Persoon Y ✓ (1)

- sweetkliere minder aktief ✓
- weens minder bloedtoevoer ✓
- dus minder/geen sweting ✓
- minder water verloor as sweet ✓
- minder in die nier geherabsorbeer/meer water in urien vrygestel ✓ (enige 4) (4)

5.1.6 Tiroksien of glukagon ✓ (1)

Tiroksien	Glukagon
- Beheer metaboliese tempo ✓	Skakel glikogeen ✓
- Hoër metaboliese tempo nodig ✓	om na glukose ✓
- om meer energie te verskaf ✓	om energie te verskaf ✓
- wat vir die aksie benodig word ✓	vir meer aksie ✓

(4)  
(17)

**MERK OF TIROKSIEN OF GLUKAGON**

- 5.2
- Persoon in noodsituasie/is in skok/het geskrik ✓
  - bloedsuikervlak is laag ✓
  - wat die bynier stimuleer ✓ om adrenalien af te skei
  - wat insulienafskeiding inhibeer ✓
  - maar glukagon afskeiding stimuleer ✓
  - wat deur die bloed na die lewer en skeletspiere vervoer word ✓
  - om glikogeen na glukose om te skakel ✓
  - adrenalien veroorsaak die verwyding van bronchi ✓
  - om ventilasie te versnel ✓
  - en ook die velbloedhaarvaatjies te laat saamtrek ✓
  - en die persoon word bleek ✓
  - minder bloed na ingewande ✓
  - omdat bloedvloei na hartspiere gekanaliseer word ✓
  - asook na die skeletspiere/ brein ✓
  - adrenalien verhoog ook die tempo en diepte van asemhaling ✓
  - hartslag neem toe ✓
  - en bloeddruk verhoog ✓
  - sodat meer suurstof en glukose ✓
  - na die skeletspiere vervoer word ✓
  - meer energie raak beskikbaar/toename in respirasie/metabolisme ✓
  - wat die vinnige verwydering van koolsuurgas veroorsaak ✓
  - hare staan orent ✓
  - en pupil vergroot ✓

(enige 15) (15)

Nie beantwoord	0
Beduidende leemtes in die logiese vloei van die antwoord	1
Minder leemtes in die logiese vloei van die antwoord	2
Goed gestruktureer – toon insig in die interpretering van die vraag	3

(3)  
(18)

**TOTAAL VRAAG 5: 35**

**TOTAAL AFDELING C: 35**

**GROOTTOTAAL: 200**