

POSSIBLE ANSWERS FOR :

BIOLOGY
PAPER TWO
HIGHER GRADE

FINAL: 11 NOVEMBER 2003

NOTE:

This document must be read in conjunction with the document entitled "POTENTIAL PROBLEMS RELATED TO MARKING HG & SG BIOLOGY 2003"

POTENTIAL PROBLEMS RELATED TO MARKING HG & SG BIOLOGY 2003

This document should be attached to all memoranda; attached to all updated guidelines that are distributed in 2004 and made available to ALL Biology teachers early in 2004.

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 are clear.
5. **If tabulation is required but paragraphs are given**
A penalty is levied for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**
Candidates will be penalized (minus one mark for 2003)
7. **If flow charts are given instead of descriptions**
Candidates will be penalized (minus one mark for 2003)
8. **If sequence is muddled and links do not make sense**
Where sequence is correct, credit. Where sequence is incorrect, do not credit. If sequence 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 for 2003.
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 be penalised
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. **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**

BIOLOGY HG PAPER 2 –2003SECTION A
QUESTION 1

1.1

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

5x2(10)

1.2

- 1.2.1 abscissic acid / ABA
- 1.2.2 apical dominance
- 1.2.3 podocytes
- 1.2.4 (ascending limb of)loop of Henlè / proximal tubule / distal tubule
- 1.2.5 renal vein
- 1.2.6 heat-exchange mechanism / heat exchanger / counter-current
- 1.2.7 hibernation (winter-sleep)
- 1.2.8 corpus callosum
- 1.2.9 autonomic nervous system
- 1.2.10 capillarity

(10)

1.3

- 1.3.1 A only / Both A and B
- 1.3.2 A only
- 1.3.3 Both A and B
- 1.3.4 Both A and B
- 1.3.5 None

5x2(10)

1.4

- 1.4.1 F
- 1.4.2 H
- 1.4.3 G
- 1.4.4 A
- 1.4.5 D

5x2(10)

1.5

- 1.5.1 1 - to demonstrate transpiration pull (suction force) (1)
- 2 - to investigate transpiration / loss of water / absorption of water (1)
- 3 - to demonstrate root pressure (1)

(3)

- 1.5.2 A mercury / glycerine / thistle funnel (glass tube) (1)
- C water (1)
- D (retort) stand / support (1)
- E tubing / stopper (1)

(4)

1.5.3

- prevents evaporation (1)of water
- indicate lowering of water level / marker for water level (1)
- indicate loss of water / transpiration (1)
- indicate absorption of water (1)
- reservoir for water (1) any(1)

1.5.4

- cut the stem underwater (1)
 - ensure that the apparatus is airtight (1)
 - cut the stem at an angle (1)
 - place apparatus in sun / windy place (1)
 - use a healthy/actively growing twig (1)
 - set up apparatus underwater (1)
 - handle mercury with care (1)
 - end of thistle funnel should not touch bottom of basin (1)
- mark first 2 (2)**

1.5.4

- apparatus 2 - the level of water in the tube will drop/ the marker will drop (1)
 - apparatus 3 - the level of water in the tube will rise / the marker will rise (1) (2)
- (12)**

1.6

B
D
G
H
K
L
N
O

(any sequence but only first 8 will be marked) (8)

[60]

SECTION B**QUESTION 2**

2.1

- 2.1.1 A afferent (1) arteriole / vessel
 B Bowman's capsule (1)
 C collecting tubule / duct of Bellini (1) (3)
- 2.1.2 1 glomerular filtration / ultra filtration / filtration (1)
 2 re-absorption / tubular re-absorption (1)
 3 (tubular) excretion / (tubular) secretion (1) (3)
- 2.1.3 Increases cell respiration / to release more energy / ATP (1)
 for the tubule to absorb substances by active absorption /
 against the concentration gradient (1) (2)
- 2.1.4 creates a high pressure (1) in the glomerulus
 allowing filtration (1) (2)
- 2.1.5
- Under the influence of ADH / Vasopressin (1)
 - produced in the hypophysis / pituitary / (master gland) (1)
 - when the hypothalamus is stimulated (1)
 - part C becomes more permeable to water (1)
 - More water is thus reabsorbed / moves by osmosis / leaves the
 collecting tubules (1)
 - back into the medulla (1)
 - and into the capillary network / blood (1)
 - The water content of the urine is thus low /
 urine is concentrated (1)
 - Part C is therefore responsible for osmoregulation (1) **any** (6)

(16)

2.2

- 2.2.1 protein (1) - they are too large to pass through the pores (1)
 into the nephron / no protein present in filtrate (1) (2)
- 2.2.2 (i) glucose is a useful substance (1)
 and is thus completely (1) re-absorbed (1)
 from the tubule / into the capillary network / blood (1) **any** (3)
- (ii) More salts are added (1) to the tubule / nephron
 from the second capillary network / blood (1)
 during tubular excretion (1)
 when they are in excess in the body (1)
 Some water from the filtrate is reabsorbed (1)
 increasing (1) the concentration of salts **any** (3)

2.2.3

a shortage (1) of insulin (1) in the body

OR

person suffers from diabetes (1) mellitus (1)

OR

re-absorption (1) of glucose does not take place completely (1)

(2)

2.2.4 No (1)

Large percentage of water (1)
was allowed to pass out as urine (1)

OR

A small percentage of water (1)
was re-absorbed (1)

OR

Urine produced (1)
is very dilute (1)

(3)
(13)

2.3

- When the blood is too acidic / pH is too low (1)
- then more hydrogen ions (1)
- are passed from the blood 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 /
making it more alkaline(1) **any (3)**

- When the blood is too basic/alkaline/pH is too high (1)
- then less hydrogen ions (1)
- are passed from the blood into the renal tubule (1)
- and less bicarbonate ions (1)
- are passed from the renal tubule to the blood (1)
- thus decreasing the pH of the blood to normal /
more acidic (1) **any (3)**

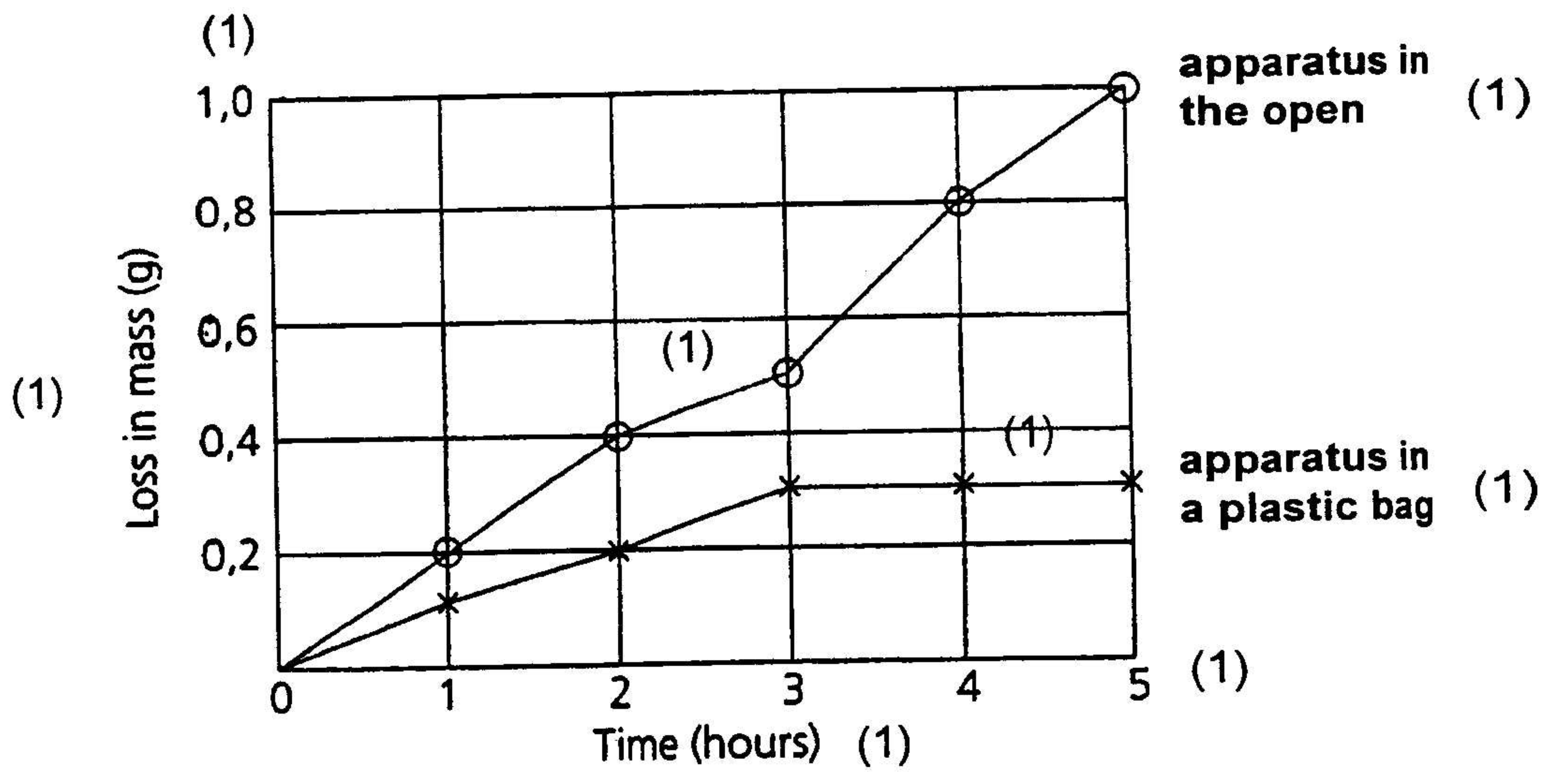
(6)

[35]

QUESTION 3

3.1

3.1.1 *Loss of mass of apparatus with time in different environmental conditions* (1)



NOTE : If two separate graphs are drawn, then mark only the first graph.

1 mark for caption

1 mark for each axis =(2); (NB: if X and Y axes are switched, then no marks allocated but the remaining criteria must be considered)

1 mark for axis title including units =(2);

1 mark for plotting of points of each graph=(2);

1 mark for title of each graph including joining of points =(2) max (8)

3.1.2 The apparatus in the open lost the greatest amount of water (1)
 as more transpiration occurred (1)
 due to a greater difference in water potential (1)
 between the air chamber in the leaf and the atmosphere (1)
 loss of water increased with time (1) any (3)

The apparatus in the plastic bag lost a smaller amount of water (1)
 since less transpiration occurred (1)
 as the humidity increased (1)
 The rate of transpiration increased and then remained constant (1)
any (3) max (5)

3.1.3 Water was absorbed by the plant from the test tube (1)
 and was lost as water vapour through the stomata / transpiration (1)

OR

If there was no oil layer in the test tube(1),
 water could evaporate (1) (2)

3.1.4 To prevent loss of water/evaporation from the tube (1)

- 3.1.5 Use plastic/tunnels/a greenhouse/ glasshouse to cover plants (1)
to increase the humidity (1) (2)
- (18)**

3.2

- It is the loss of water (1)
 - in a liquid form / as droplets (1)
 - through hydathodes / openings at the margins of leaves (1) **(3)**
-
- Guttation is favoured by a combination of two or more of the following :
 - high humidity (1)
 - high soil water (1)
 - low temperature (1)
 - low light intensity (1)
 - still conditions / no wind (1) **mark first (3) only (6)**

3.3

3.3.1 potometer (1) (1)

3.3.2 The guard cells appear turgid / swollen (1)
The thin/outer walls bend outwards (1)
The thick/inner walls are apart from each other / buckle inwards (1) **(3)**

3.3.3

Due to loss of potassium ions from the guard cells /
conversion of glucose to starch (1)
the water potential of the guard cells increase (1)
Water moves from the guard cells to the surrounding cells (1)
Guard cells become flaccid / less turgid (1)
The thin walls bend inwards (1)
pushing the thick walls together (1) **any (3)**

3.3.4 Between C and D (2)

3.3.5 Between B and C (2)
(11)

[35]

QUESTION 4

4.1

4.1.1 (eye) accommodation (1)

4.1.2

- the ciliary muscles (1), part A (1) contracts (1)
- the suspensory ligaments (1), part B (1) slackens (1)
- the lens (1) E (1) becomes more convex (1)

OR

- the ciliary muscles (1), part A (1) relaxes (1)
- the suspensory ligaments (1), part B (1) become taut (1)
- the lens (1) E (1) becomes less convex (1)

4.1.3 Diagram 2 (1) (1)

4.1.4

- With old age the lens (1)
- loses its elasticity / the ability to become more convex / ability to change shape (1)
- image focusing behind the retina/image not focussing on retina (1)
- The lenses of the glasses allows the light rays to converge on the retina (1)
- thus forming a clear image. (1) **any** (4)

(15)

4.2

4.2.1

- A transmits sound waves from tympanic membrane/ to anvil(incus) / amplifies sound (1)
- B transmits sound waves from the outside or pinna / to the tympanic membrane / secretes cerumen / prevents foreign objects reaching tympanic membrane (1)
- E transmits sound waves from the stirrup (stapes) / to the inner ear or perilymph) / amplifies sound (1)

(3)

4.2.2 (i) Part C will not be able to vibrate (1)
thus impeding hearing/ leads to deafness (1) (2)

- (ii) Equal pressure cannot be maintained (1)
on either side of the tympanic membrane (1)
hindering its vibration (1)
and thus impeding / distorting hearing/deafness (1)
Accumulating fluids in the middle ear (1)
Causing the tympanic membrane to burst (1) **any** (2)

4.2.3 pharynx / nasopharynx / throat (1)

10

4.2.4 part C has a larger surface area (1) than part E (1)

OR

part C has a larger surface area/ part E has a smaller surface (2)

OR

Part C is large (1)

Part E is small (1)

(2)

4.2.5

- semi-circular canals
- ampullae / cristae
- sacculus / maculae
- endolymph
- utriculus / cupula / otoliths **(mark first 3 only)** **(3)**

(13)

4.3

4.3.1

- a small brush /a dropper (1) should be used instead of a large brush to place the substance accurately in a particular area (1)
- Use a dropper instead of a brush (1)
to control the amount of each substance to be used in the test (1)
- the mouth needs to be rinsed before the application of a new substance (1) so that the effect of the previous applied substance can be removed (1)
- leave period of time between testing different substances(1)
to allow effect of previous taste to wear off (1)
- blindfold the person (1) to avoid person predicting the order in which the solutions are being applied (1)
- use more than one person (1) to improve reliability of results (1)
- use a different brush for each solution (1)
to prevent mixing of solutions (1) **any 2x2 =(4)**

4.3.2 D

(2)

4.3.3 nose / olfactory organ

(1)

(7)

[35]

QUESTION 5

- 5.1 (1)
- 5.1.1 Decreased (1)
- 5.1.2 after 18 / 19 / 20 / 21 (1) years (1) (2)
- 5.1.3
Height at 14th year = 154(1) cm + 10(1)cm
=164 (1)cm (1) (4)
- 5.1.4 Growth hormone /GH / STH / (1)
secreted by Hypophysis / Pituitary gland / Master gland (1)
- Thyroxin (1)
secreted by Thyroid gland (1) (4)
- 5.1.5 Through the blood (1)
- 5.1.6
- For increased energy production (1)
 - Glucagon (1): converts glycogen to glucose (1)
 - Thyroxin (1): increases metabolic rate/heart beat / breathing rate / blood pressure (1) (5)

[17]

5.2

- When it is hot (1)
- Heat receptors (1)
- in the skin (1)
- and receptors in the hypothalamus (1)
- are stimulated by the high temperature (1)
- The stimulus in the skin is converted into an impulse (1)
- and transmitted to the hypothalamus (1)
- which acts as the heat regulating centre of the body (1)

and any ONE of the following columns

In humans	In dolphins	In dogs	In elephants
<ul style="list-style-type: none"> ▪ Impulses are sent from (1) the hypothalamus ▪ to the sweat glands (1) ▪ and erector muscles (1) ▪ More sweat is produced (1) ▪ and more heat is lost (1) ▪ by evaporation of sweat (1) ▪ The erector muscles relax (1) ▪ causing the hair (1) ▪ to lie flat on the skin (1) ▪ trapping very little air between the hair (1) ▪ Insulation is thus reduced (1) 	<ul style="list-style-type: none"> ▪ Impulses are sent from (1) the hypothalamus ▪ to the central artery of the flipper(1) ▪ causing it to increase in diameter (1) 	<ul style="list-style-type: none"> ▪ Impulses are sent from (1) the hypothalamus ▪ to the sweat glands on the paws (1) ▪ More sweat is produced (1) ▪ and more heat is lost (1) ▪ by evaporation of sweat (1) ▪ Panting (1) ▪ increases evaporation (1) ▪ from the upper respiratory tract (1) ▪ allowing for heat to be lost (1) 	<ul style="list-style-type: none"> ▪ The elephant flaps its ears (1) ▪ Allowing greater heat loss (1) ▪ From the blood vessels of the ear (1)

- Dilated blood vessels allow more blood to the skin (1)
- and more heat is thus lost from the body (1)
- by radiation/ conduction / convection (1)
- thus lowering the body temperature to normal (1) any (15)

Marks for synthesis will be allocated as follows :

MARK	CRITERIA
0	very little or no facts
1	little facts but no logical sequence
2	more facts but not logically sequenced
3	most facts and sequenced logically

Content (any) :15

Synthesis : 3

(18)

[35]

GRAND TOTAL : 200

MOONTLIKE ANTWOORDE VIR :

BIOLOGIE

VRAESTEL TWEE

HOËRGRAAD

FINAAL: 11 November 2003

LET WEL: Hierdie dokument moet in samehang met die dokument getitel
"POTENSIELE PROBLEME BETREFFENDE DIE NASIEN
VAN
BIOLOGIE HG EN SG 2003" gelees word.

**POTENSIËLE PROBLEME MET BETREKKING TOT NASIEN VAN HG & SG
BIOLOGIE 2003**

Hierdie dokument moet aan alle memoranda en aan alle hersiene riglyne geheg word wat in 2004 versprei en moet vroeg in 2004 aan ALLE Biologieonderwysers beskikbaar gestel word.

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 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 met EEN punt gepenaliseer word.
6. **As geannoteerde diagramme aangebied in plaas van beskrywings wat vereis word**
Kandidate sal met EEN punt gepenaliseer word.
7. **Indien vloiediagramme i.p.v beskrywings aangebied word**
kandidate word met EEN Punt gepenaliseer.
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 vir 2003, maar nie vir 2004 nie.
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**
Memorandum sal afsonderlike punte vir eenhede aandui.
16. **Wees sensitief vir die betekenis van die antwoord, wat soms op 'n verskillende manier aangebied kan word**
17. **Opskrif** Alle illustrasies (soos diagramme, tekeninge, grafieke, 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. **Geen verandering mag aan die goedgekeurde memorandum aangebring word, sonder om met die Provinsiale Interne Moderator wat op sy/haar beurt met die Eksterne Moderatore sal beraadslaag nie.**

BIOLOGIE HG VRAESTEL 2**AFDELING A
VRAAG 1**

1.1

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

5x2 (10)

1.2

- 1.2.1 absisiensuur / ABA / ABS
- 1.2.2 apikale oorheersing / apikale dominansie / hoofknopoorheersing
- 1.2.3 podosiete
- 1.2.4 (stygende been) van die boog / lus van Henlé / proksimale kronkelbuis / distale kronkelbuis
- 1.2.5 nieraar / niervene / renale vene
- 1.2.6 hitte uitruilmeganisme / teenstroommeganisme
- 1.2.7 hibernering / winterslaap / oorwintering
- 1.2.8 corpus callosum / senuweebalk
- 1.2.9 outonome senuweestelsel
- 1.2.10 kapillariteit

(10)

1.3

- 1.3.1 Slegs A / beide A en B / beide
- 1.3.2 Slegs A
- 1.3.3 Beide A en B / beide
- 1.3.4 Beide A en B / beide
- 1.3.5 Geen

5x2(10)

1.4

- 1.4.1 F
- 1.4.2 H
- 1.4.3 G
- 1.4.4 A
- 1.4.5 D

5x2(10)

1.5

- 1.5.1 1 om die suigkrag / trekkrags van transpirasie te demonstreeer (1)
- 2 om transpirasie / verlies van water / absorpsie van water te ondersoek (1)
- 3 om worteldruk (1) te demonstreeer **(3)**

- 1.5.2 A kwik / gliserien / langbeentregter / boltregter / (glasbuis) (1)
- C water (1)
- D (retort)staander / kolfstaander / ondersteuningsapparaat (1)
- E (rubber) buis / (rubber)prop (1)

(4)

- 1.5.3 voorkom die verdamping (van water) (1)
 dui die daling van watervlak aan / merk die watervlak (1)
 dui die verlies van water aan (1)
 dui die absorpsie van water aan (1)
 'n waterreservoir (1)
 dui transpirasie aan (1)

(enige een) (1)

- 1.5.4 sny die stingel onder water af (1)
 maak seker die apparaat is lugdig (1)
 sny die stingel teen 'n hoek (1)
 langbeentregter moet nie die bodem van die beker raak nie. (1)
 stel die apparaat onder water op (1)
 hanteer die kwik versigtig (1)
 gebruik 'n gesonde plant / aktief groeiende plant (1)
 sit apparaat in die son / wind / verwarmmer (1)

(merk eerste twee) (2)

- 1.5.5 apparaat 2 – die watervlak in die buis neem af / sak / olievlak sal daal /
 merker sal daal (1)
 apparaat 3 – die watervlak in die buis neem toe (1) (2)
(12)

1.6

B
 D
 G
 H
 K
 L
 N
 O

(enige volgorde maar slegs die eerste 8 word gemerk)

(8)
[60]

AFDELING B
VRAAG 2

2.1

- 2.1.1 A afferente (1) / toevoerende (1) arteriool / slagaartjie / vat
 B kapsel van Bowman (1)
 C versamelbuis / buise van Bellini(1) (3)
- 2.1.2 1 (glomerulêre) filtrasie / (ultra) filtrasie / filtrasie (1)
 2 herabsorpsie / tubulêre herabsorpsie (1)
 3 (buisie) sekresie / (buisie) ekskresie (1) (3)
- 2.1.3 Verhoog selrespirasie / om meer energie vry te stel / ATP / (1) vir die buisie om stowwe te absorbeer / vir aktiewe absorpsie / teen die konsentrasie gradient (1) (2)
- 2.1.4 skep 'n hoë druk (1) in die glomerulus sodat filtrasie kan plaas vind (1)
- 2.1.5
- Onder die invloed van ADH / Vasopressien (1)
 - geproduseer in die hipofise / pituitêre / meesterklier (1)
 - wanneer die hipotalamus gestimuleer word (1)
 - raak deel C meer deurlaatbaar vir water (1)
 - Meer water word nou geherabsorbeer / beweeg deur osmose / verlaat die versamelbuisie (1)
 - terug tot in die murg (1)
 - en tot in die sekondêre kapillêre netwerk / bloed (1)
 - Die waterinhoud van die urien is dus laag (1)
d.i meer gekonsentreerd
 - Deel C is verantwoordelik vir osmoregulering (1)
- enige (6)**
(16)

2.2

- 2.2.1 proteïene (1) is te groot om deur die porieë te beweeg (1)
 tot in die nefron / daar is geen proteïene in die filtraat nie (1) (2)
- 2.2.2 (i) glukose is 'n bruikbare stof (1)
 en word dus volledig (1) geherabsorbeer (1)
 vanaf die buisies / tot in die kapillêre netwerk / bloedhaarvaatjies / bloed (1) **enige (3)**
- (ii) Meer soute word toegevoeg (1) tot die buisies / nefron
 vanaf die kapillêre netwerk / bloed (1)
 gedurende buisie ekskresie (1)
 wanneer dit in oormaat is in die liggaam (1)
 'n gedeelte van die water word uit die filtraat geherabsorbeer (1)
 wat tot gevolg het dat die konsentrasie soute toeneem (1) **enige(3)**

2.2.3

'n tekort (1) aan insulien (1) in die liggaam
OF
 herabsorpsie (1) van glukose vind nie plaas nie (1)
OF
 persoon lei aan diabetes (1) mellitus (1) (2)

2.2.4 Nee (1)

Hoë persentasie water (1)
 was toegelaat om as urien uit te beweeg (1)
OF
 'n Klein persentasie water (1)
 was geherabsorbeer (1)
OF
 Urien geproduseer (1)
 is baie verdun (1) (3)
(13)

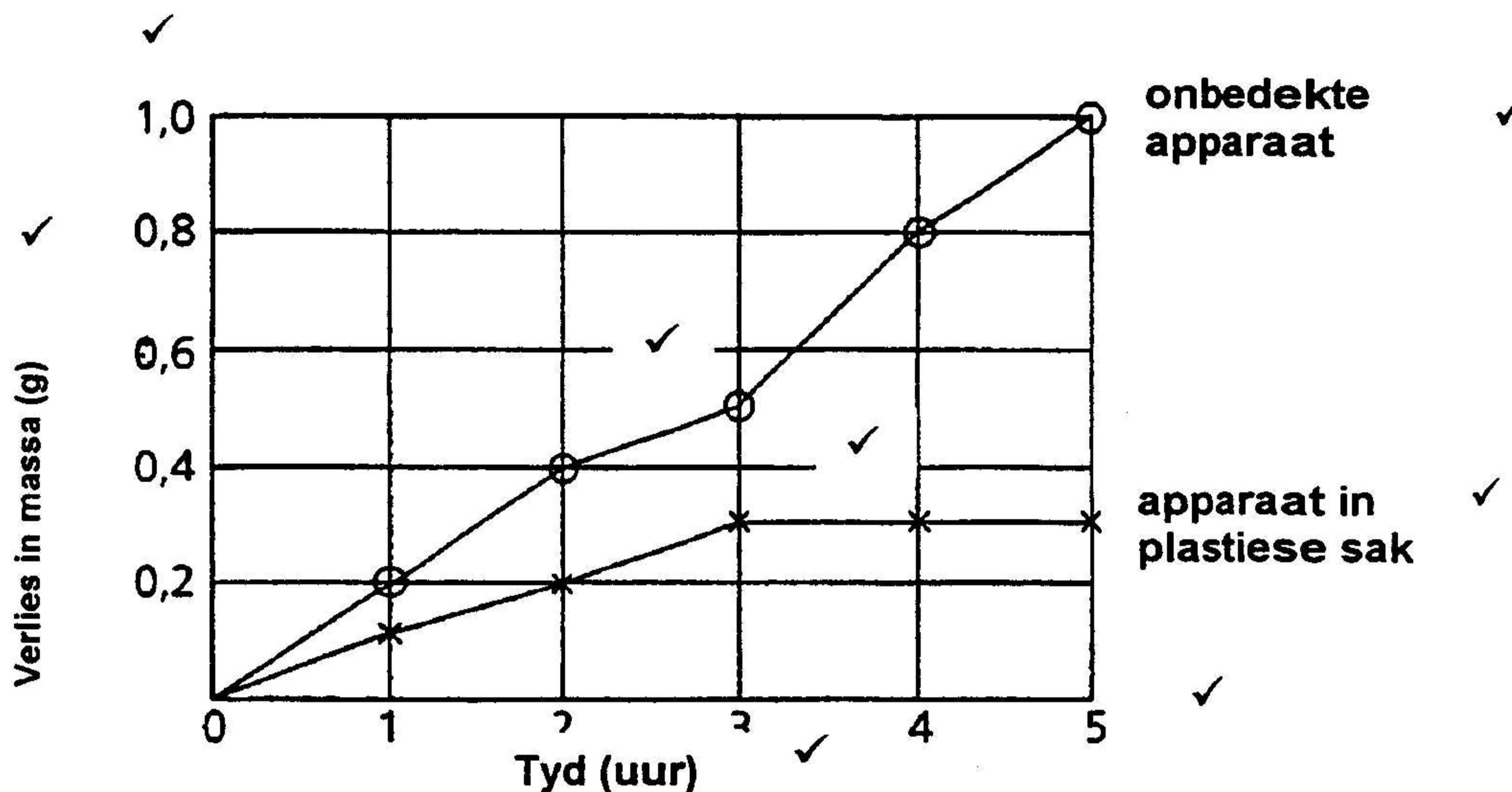
2.3

- Wanneer die bloed te suuragtig raak / lae pH (1)
- sal meer waterstofione (1)
- uit die bloed tot in die nierbuis beweeg (1)
- meer bikarbonaate (1)
- beweeg vanaf die nierbuis na die bloed.
- wat die pH van die bloed verhoog na normaal /
 en maak dit meer alkalies (1) enige (3)

- Wanneer die bloed te alkalies raak / hoë pH (1)
- sal minder waterstofione (1)
- vanaf die bloed na nierbuis beweeg (1)
- en minder bikarbonaate (1)
- beweeg vanaf die nierbuis na die bloed (1)
- en die pH laat afneem na normaal /
 meer suuragtig (1) enige (3)
(6)
[35]

3.1

3.1.1 Verlies van massa van apparaat met tyd in verskillende omgewingstoestande ✓



Let Wel: As twee aparte grafieke geteken is, merk slegs die eerste een

1 punt vir die naam van die grafiek

1 punt vir elke as = (2); 1 punt vir elke as benoem = (2); (NB Indien X en Y asse omgeruil is, word geen punte vir asse toegeken nie, maar die res van die kriteria word nog steeds in aanmerking geneem)

1 punt vir die trek van elke grafiek (2)

1 punt vir die benoeming van elke grafiek (2)

maks (8)

3.1.2 Die onbedekte apparaat het die meeste water verloor (1)

soos meer transpirasie plaasgevind het (1)

As gevolg van die groter verskil in waterpotensiaal (1)

tussen die lugkamers in die blaar en die atmosfeer (1)

neem die waterverlies toe met tyd (1)

enige (3)

Die apparaat in die plastiese sak het 'n kleiner hoeveelheid water verloor (1)

omdat minder transpirasie plaasgevind het (1)

soos die humiditeit toeneem (1)

Die tempo van transpirasie het toegeneem en toe konstant gebly (1)

enige (3)

maks (5)

3.1.3 Water was deur die plant uit die proefbuis geabsorbeer (1)

en is afgegee as waterdamp deur die stomata / transpirasie (1)

OF

As daar geen olie op die water in die proefbuis was nie (1)

sou water kon verdamp (1)

(2)

3.1.4 Om waterverlies uit die buis te voorkom / verdamping

(1)

3.1.5 Bedek plante met 'n deurskynende plastieksak / tonnel / kweekhuis / glashuis (1)

om die humiditeit te verhoog (1)

enige (2)

(18)

3.2

- Dit is die verlies van water (1)
- in vloeistofvorm / druppels (1)
- deur openinge, die hidatodes / waterporieë / openinge op blaarrande (1) (3)

- Guttasie word bevoordeel deur 'n kombinasie van twee of meer van die volgende:
 - die humiditeit hoog is (1)
 - die grond baie water bevat (1)
 - die temperatuur laag is (1)
 - lae ligintensiteit (1)
 - windlose toestande (1)

merk eerste drie enige(3)
(6)

3.3

3.3.1 potometer (1) (1)

3.3.2 Die sluitselle kom turgessent / geswel voor (1)
Die dun / buite wand / rugwand) buig na buite (1)
Die dik / binne wande / buikwand is weggetrek van mekaar (1) (3)

3.3.3 As gevolg van kaliumione wat uit die sluitselle beweeg /
omskakeling van glukose na stysel (1)
Die waterpotensiaal van die sluitselle neem toe (1)
Water beweeg vanaf die sluitselle na omringende selle (1)
Sluitselle raak minder turgessent / pap (1)
Die dun wande buig na binne (1)
en druk die dik wande teenmekaar (1)

enige (3)

3.3.4 Tussen C en D (2)

3.3.5 Tussen B en C (2)
(11)
[35]

VRAAG 4

4.1

4.1.1 (oog) akkommodasie (1)

4.1.2

- die siliaarspiere (1), deel A (1) trek saam (1)
- die spanning op die suspensoriese ligamente / draagbandligamente (1)
- deel B (1)
- verminder (1)
- die lens (1) E (1) raak meer konveks (1)

OF

Die siliêrspier (1), deel A, (1) ontspan (1)

Die suspensoriese ligamente (1), deel B (1) word meer gespanne (1)

Die lens (1) deel E (1) raak minder konveks (1) (9)

4.1.3 Diagram 2 (1) (1)

4.1.4

- Met ouderdom verloor die lens (1)
 - sy elasticiteit / die vermoë om meer konveks te raak / of die vorm te verander (1)
 - beeld word agter retina gevorm / beeld word nie op retina gefokus (1)
 - Die konvekse lense breek ligstrale om op die retina te konvergeer (1)
 - sodoende word 'n duidelike beeld gevorm (1) **enige (4)**
- (15)**

4.2

4.2.1

- A Gelei klankgolwe / vibrasies vanaf trommelvlies na aambeeld (inkus) / versterk klank (1)
- B Gelei klankgolwe / vibrasies vanaf buite of pinna / oorskulp na die trommelvlies / skei was (serumen) af / voorkom dat vreemde voorwerpe die oordrom bereik (1)
- E Gelei klankgolwe / vibrasies vanaf die stiebeul (stapes) na die inwendige oor / versterk klank (1) **enige (3)**

4.2.2 (i) Deel C sal nie instaat wees om te vibreer nie (1)
wat gehoor belemmer / doofheid (1) (2)

- (ii) Gelyke druk kan nie gehandhaaf word (1)
aan beide kante van die trommelvlies nie (1)
wat die vibrasies strem (1)
en gevolglik gehoor belemmer / doofheid / distorsie (1)
Ophoping van vloeistowwe in die middelloor (1)
en veroorsaak dat die trommelvlies bars (1) **enige (2)**

4.2.3 farinks / nasofarinks / keel / keelholte (1)

- 4.2.4 deel C het 'n groter oppervlakte (1) as deel E (1)
OF
 deel C het 'n groter oppervlak / area (2)
OF
 deel E het 'n kleiner oppervlak (2)
OF
 deel C is groot (1) en deel E is kleiner (1) (2)

4.2.5

- halfsirkelvormige kanale / semisirkulêre kanale
- ampulla / kristae
- sakkulus (sakkie) / makulae
- utrikulus (blasie) / kupula / otoliete
- endolimf

**(merk eerste drie) enige (3)
 (13)**

4.3

4.3.1

- gebruik 'n klein kwas / medisyne drupper (1) in plaas van die groot kwas (1)
 om die stof akkuraat op 'n spesifieke area te plaas (1)
- Gebruik 'n drupper in plaas van 'n kwas (1)
 om die hoeveelheid van elke stof te kontroleer (1)
- Die mond moet uitgespoel word voordat 'n volgende / nuwe stof toegevoeg word (1) om die effek van die vorige stof uit te skakel (1)
- Laat 'n tydsverloop toe tussen die verskillende toetse (1)
 om die effek van die vorige toets uit te skakel (1)
- Blinddoek die persoon om te verhoed dat die persoon sien watter volgorde die toets volg (1)
- Gebruik meer as een persoon in die toets (1)
 om die betroubaarheid van die resultate te verbeter (1)
- Gebruik verskillende kwassies vir elke toets (1)
 om vermenging van smake te verhoed (1)

enige (2 x 2) (4)

- 4.3.2 D / Bitter stowwe kan alleenlik op die agterkant van die tong geproe word (2)

- 4.3.3 neus / olfaktoriese orgaan (1)

**(7)
 [35]**

VRAAG 5

5.1

5.1.1 Neem af / daal / verminder (1)

5.1.2 Na 18 / 19 / 20 / 21 (1) jaar (1) (2)

5.1.3

Lengte met 14de jaar = 154 (1) cm + 10 cm (1)
= 164 (1) cm (1) (4)5.1.4 Groeihormoon / GH / STH (1)
afgeskei deur die hipofise / meesterklier / pituitêre klier (1)Tiroksien (1)
afgeskei deur die tiroiedklier / skildklier (1) (4)

5.1.5 Deur die bloed (1)

5.1.6 Benodig verhoogde energie produksie (1)

- Glukagon (1): skakel glikogeen om na glukose (1)
- Tiroksien (1): verhoog metaboliese tempo / hartklop / asemhalingstempo / bloeddruk (1)

(5)
[17]

5.2

- As dit warm is (1)
 - hitte reseptore / Ruffini's liggaampies (1)
 - in die vel (1)
 - en reseptore in die hipotalamus (1)
 - word gestimuleer deur die hoë temperatuur (1)
- Die stimulus in die vel word omgeskakel tot 'n impuls (1)
- wat gelei word na die hipotalamus (1)
 - wat optree as die hitte reguleringsentrum (1)

En enige EEN van die volgende kolomme

In die mens	In dolfyne	In honde	In olifante
<ul style="list-style-type: none"> ▪ Impulse word gestuur (1) vanaf die hipotalamus na die sweetkliere (1) en die haarspiere (1) ▪ meer sweet word geproduseer (1) ▪ en meer hitte gaan verlore (1) ▪ deur die verdamping van sweet (1) ▪ die haarspiere verslap (1) ▪ wat veroorsaak dat die hare (1) ▪ plat lê op die vel (1) en minder lug vasvang tussen die hare (1) ▪ isolering word dus verminder (1) 	<ul style="list-style-type: none"> ▪ Impulse word vanaf die hipotalamus (1) na die sentrale arterie in die vin (1) gestuur ▪ wat veroorsaak dat die deursnee toeneem (1) 	<ul style="list-style-type: none"> ▪ Impulse word vanaf (1) die hipotalamus ▪ Na die sweetkliere onder die pote (1) gestuur ▪ Meer sweet word geproduseer (1) en ▪ Meer hitte gaan verlore (1) deur die verdamping van sweet (1) ▪ Hyging (1) ▪ laat verdamping toeneem (1) ▪ in die boonste lugweë (1), ▪ wat die verlies van hitte toelaat (1) 	<ul style="list-style-type: none"> ▪ Die olifant klap sy ore (1) ▪ wat 'n groter hitteverlies toelaat (1) ▪ vanaf die bloedvate van die oor (1)

- Verwyde bloedvate laat meer bloed na die vel vloei (1)
- wat meer hitte deur die liggaam laat verlore gaan (1)
- deur uitstraling / konveksie / geleiding (1)
- wat gevolglik die liggaamstemperatuur na normaal laat terugkeer (1)

(enige 15)

Punte vir die sintese sal soos volg toegeken word:

PUNTE	KRITERIA
0	baie min of geen feite
1	min feite maar volgorde nie logies
2	meer feite volgorde nie logies
3	meeste van die feite en volgorde logies

Inhoud: enige 15

Sintese : 3

(18)

[35]

GROOT TOTAAL : 200