POSSIBLE ANSWERS FOR :

BIOLOGY

PAPER TWO

STANDARD GRADE

FINAL: 12 NOVEMBER 2003

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

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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

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BIOLOGY SG PAPER 2

SECTION A
QUESTION 1

1.1 1.1.1 C (2)
1.1.2 B (2)
1.1.3 A /C (2) give credit if learner writes " there is no appropriate answer
1.1.4 B (2)
1.1.5 D (2) 5x2**(10)**

1.2 1.2.1 geotropism / gravitropism (1)
1.2.2 ethylene / ethane (1)
1.2.3 ADH / vasopressin / aldosterone (1)
1.2.4 sodium / potassium / chloride ions/ bicarbonate ions (1)
1.2.5 hypophysis / pituitary / (master gland) (1)
1.2.6 (renal) pyramid / ducts of Bellini (1)
1.2.7 (renal) capsule (1)
1.2.8 panting / hyper-ventilating (1)
1.2.9 tissue fluid / interstitial fluid (1)
1.2.10 shivering (1) **(10)**

1.3 1.3.1 D (2)
1.3.2 H (2)
1.3.3 J (2)
1.3.4 E (2)
1.3.5 B (2) 5x2**(10)**

1.4 1.4.1 (i) D (1) (1)
(ii) B (1) (1)
(iii) A (1) (1)
(iv) C (1) (1)

1.4.2 F epidermis (1)
G erector muscle / (hair muscle) (1) (2)

1.4.3 E (1) and H (1) (2)

1.4.4 It constricts / shunt operates (1) (1)

1.4.5 olfactory / chemoreceptors / (smell receptors) (1) (1)
(10)

1.5 1.5.1 (i) F (1) Semicircular canal (1) (2)
(ii) E (1) Cochlea (1) (2)

1.5.2 (i) C (1) Eustachian tube (1) (2)
(ii) D (1) (Cochlear branch of auditory/) nerve (1) (2)

1.5.3 A and B (2)

(10)

[50]

QUESTION 2

2.1

2.1.1 2 (1) (1)

2.1.2 4 (2)

(water absorbed: 8ml/min)– (water lost: 10 ml/min) **(1)** = -2 **(1)** ml/min **(1)**

OR

(water lost: 10ml/min)– (water absorbed: 8ml/min) **(1)** = 2 **(1)** ml/min **(1)**

OR

If no calculation was done …accept the following :

More water lost **(1)**
than water absorbed **(1)**
(concession for 2003)

(5)

2.1.3 1 (1)

Water absorption (1)is greater(1)than water loss (1) by 3ml/min (1)
causing root pressure to develop in the plant(1).
This leads to the release of water in liquid form ***any*** (4) (5)

(11)

2.2

2.2.1 To investigate the effect of various environmental factors/ a particular set of conditions (1) on the rate (1) of transpiration.(1) ***max*** (2)

2.2.2 by opening the tap / (applying pressure on the stopper) (2) (2)

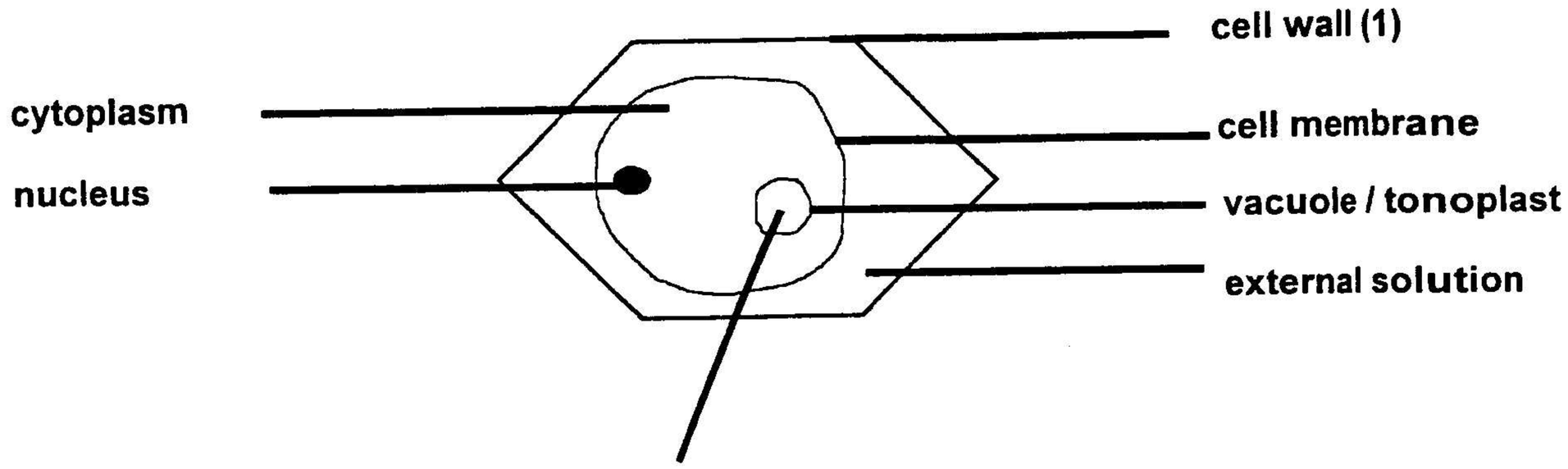
2.2.3

- humidity (1)
- temperature (1)
- light intensity (1)
- air pressure (1)
- wind (1)

any (3)
(7)

5

2.3



Compulsory marks
cell wall (1)
original shape of cell (1)
for space between cell wall and cell membrane (1)
for a smaller vacuole (1)
plus
any 3 other correctly labelled parts (vacuole gets a mark once only) **(7)**

[25]

6

QUESTION 3

3.1 The loss of water in vapour form / by evaporation (1)
from the aerial parts (1)
chiefly through stomata / lenticels (1) **(3)**

3.2

- sunken stomata (1)
- few stomata (no stomata) (1)
- thick cuticle (1)
- thick epidermis (1)
- leaves modified to form thorns (1)
- small/ compound surface area (1)
- thick / milky sap (1)
- hairs / trichomes /scales (1)

(mark first 4 only) **(4)**

3.3

3.3.1 lizard (1) (1)

3.3.2 Its body temperature varies (1) with that of the environment (1)
Depend almost entirely on environment (1) for their body heat (1)
any 2 (2)

3.3.3 (i) accept any answer between 14 –16 **(1)** ^{0}C **(1)** (2)
(ii) accept any answer between 36 - 38 **(1)** ^{0}C **(1)** (2)

3.3.4

- The lizard arranges its body parallel to the suns rays (1)
- or lizard draws its legs under its body (1)
- to reduce its exposure to the sun (1)
- Lizard lifts two legs off ground/decreasing contact with ground (1)
- Lizard goes into the shade / hides under rocks /burrows (1)
- thus absorbing less heat (1) ***any*** (3)

3.3.5

- The rate (1) of sweating increases (1) / sweat glands are more active (1) producing more sweat (1)
- As the sweat evaporates (1)
- the skin is cooled (1)
- thus lowering the temperature (1) ***any*** (3)

(13)

3.4

- Receives sensations from the sense organs (1)
- Controls higher thought processes (1)
- Seat of consciousness and emotions (1)
- Controls judgement / intelligence / memory (1)
- Controls voluntary actions (1)
- Secretes hormones (1)
- Responsible for muscle tone / balance and equilibrium (1)
- Contains reflex centres / centre for involuntary actions (1)

(mark first 5 only) **(5)**

[25]

7

QUESTION 4

4.1

4.1.1 B sensory neuron / monopolar / unipolar / afferent / dendrite (1)
E connector neuron / interneuron / multipolar /axon (1) (2)

4.1.2 Will feel heat (1)
but would not be able to respond to stimuli (1)
and hence the finger/skin could be burnt (1) ***any*** (2)

4.1.3 Receive stimuli / changes a stimulus into an impulse (1) (1)

4.1.4 (D) (1)
- this region contains the ganglion/
this region contains the dorsal root of spinal nerve/
this is the region where the sensory neuron enters/
this region contains the dorsal fissure ***any 1*** (2) (3)

(8)

4.2

4.2.1 C lens (1)
E optic nerve (1) (2)

4.2.2 (i) B (1)
(ii) D (1)
(iii) G (1) (3)

4.2.3
- can alter its shape /elastic / jelly like (1)
- is transparent (1)
- convex / refracts light (1)
- situated in the direct path of light (1) ***(mark first 3)*** (3)

4.2.4 B (1)
- Initially pupil diameter is small (1) for person 1
- On entering an area of low light intensity (1)
- his/her pupil diameter will increase (1)
- to allow more light to enter (1)
- to form a clear image (1) any (3) (4)

(12)

4.3

4.3.1 adrenal / supra-renal (1) (1)
4.3.2 adrenalin (1) (1)
4.3.3 glucagon (1) (1)
4.3.4 glucose (1) (1)
4.3.5 thyroxin (1) (1)

(5)

[25]

QUESTION 5

5.1

5.1.1 B renal vein (1)
F urethra (1) (2)

5.1.2 - proteins (1)
- glucose (1)
- vitamins (1)
- amino acids (1) ***(mark first 2)*** (2)

5.1.3 stores urine (1) (1)

5.1.4 controls movement of urine out of the bladder (1) (1)

5.1.5
- excretion (1)
- osmoregulation (1)
- regulate pH (1)
- regulate salt/ion content (1) ***(mark first 3)*** (3)

(9)

5.2

5.2.1 A afferent (1) arteriole
B efferent (1) arteriole
C glomerulus / capillaries (1)
D Bowman's capsule (1) (4)

5.2.2 4 - 5 **(1)** mm **(1)** **OR** 0.4 – 0.5 **(1)** cm **(1)** (2)

5.2.3 A has a larger / wider diameter (1) while B has a smaller / narrower diameter (1) **OR** A has a larger / wider (1) diameter than B (1)
It increases the pressure (1) in the glomerulus
for filtration (1) (4)

5.2.4 urea (1), uric acid (1), water (1), glucose (1), amino acids (1), salts (1), vitamins (1), creatine/ creatinine (1), toxins (1), hormones (1), hippuric acid (1)
(mark first 4) (4)

5.2.5 (i) cuboidal / epithelium (1)
(ii) squamous / epithelium / podocytes (1) (2)

(16)

[25]

GRAND TOTAL : 150

MOONTLIKE ANTWOORDE VIR :

BIOLOGIE

VRAESTEL TWEE

STANDAARD

GRAAD

FINAAL: 12 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 vloeidiagramme 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.

3

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 SG VRAESTEL 2

AFDELING A
VRAAG 1

1.1 1.1.1 C (2)
1.1.2 B (2)
1.1.3 A / C (2) Gee punte indien die leerder skryf " Geen toepaslike antwoord"
1.1.4 B (2)
1.1.5 D (2) 5x2**(10)**

1.2 1.2.1 geotropisme / gravitropisme (1)
1.2.2 etileen / eteen (1)
1.2.3 ADH / vasopressien / aldosteroon (1)
1.2.4 natrium / kalium / chloried / bikarbonaatione **(merk ook simbole)** (1)
1.2.5 hipofise / pituïtêre- / (meesterklier) (1)
1.2.6 (nier)piramiede / buise van Bellini (1)
1.2.7 (nier)kapsel (1)
1.2.8 hyging / hiperventilering (1)
1.2.9 weefselvloeistof / interstisiële vloeistof (1)
1.2.10 bewing/ bibbering (1) **(10)**

1.3 1.3.1 D (2)
1.3.2 H (2)
1.3.3 J (2)
1.3.4 E (2)
1.3.5 B (2) 5x2**(10)**

1.4 1.4.1 (i) D (1)
(ii) B (1)
(iii) A (1)
(iv) C (1) (4)

1.4.2 F epidermis (1)
G erektorspiere / haarspier (1) (2)

1.4.3 E (1) en H (1) (2)

1.4.4 Dit vernou (1)

1.4.5 olfaktoriese / chemo- / reukreseptore (1) **(10)**

1.5 1.5.1 (i) F (1) Halfsirkelvormige-/ semisirkulêre -/ sekelkanale(1) (1)
(ii) E (1) Koglea / slakkehuis (1) (2)

1.5.2 (i) C (1) Buis van Eustachius (1) (2)
(ii) D (1) Gehoorsenuwee / ouditêre senuwee / Kogleêre tak van gehoorsenuwee (1) (2)

1.5.3 A en B (2)
(10)
[50]

5

VRAAG 2

2.1

2.1.1 2 (1) (1)

2.1.2 4 **(2)** (1)

(water geabsorbeer 8ml/min)–(waterverlies**(1)**10 ml/min)= -2 **(1)** ml / min **(1)**

OF

(waterverlies 10 ml/min)- (water geabsorbeer**(1)**8ml/min) =2 **(1)** ml / min **(1)**

OF

As geen berekening gedoen is nie aanvaar die volgende:

Meer water verlore (1)
as water geabsorbeer (1)
(Toegewing vir 2003)

(5)

2.1.3 1 **(1)**

Waterabsorpsie (1) is meer (1) as waterverlies (1) teen 3 ml / min (1) wat tot gevolg het dat 'n worteldruk in die plant ontwikkel (1). Dit het tot gevolg dat water in vloeistofvorm / druppels. verlore gaan (1)

enige (4)

(5)
(11)

2.2

2.2.1 Om die invloed van verskeie omgewingsfaktore / 'n spesifieke stel toestande (1) op die tempo (1) van transpirasie te ondersoek (1) **maks**(2)

2.2.2 deur die kraan oop te maak / (deur druk op die prop toe te pas) (2) (2)

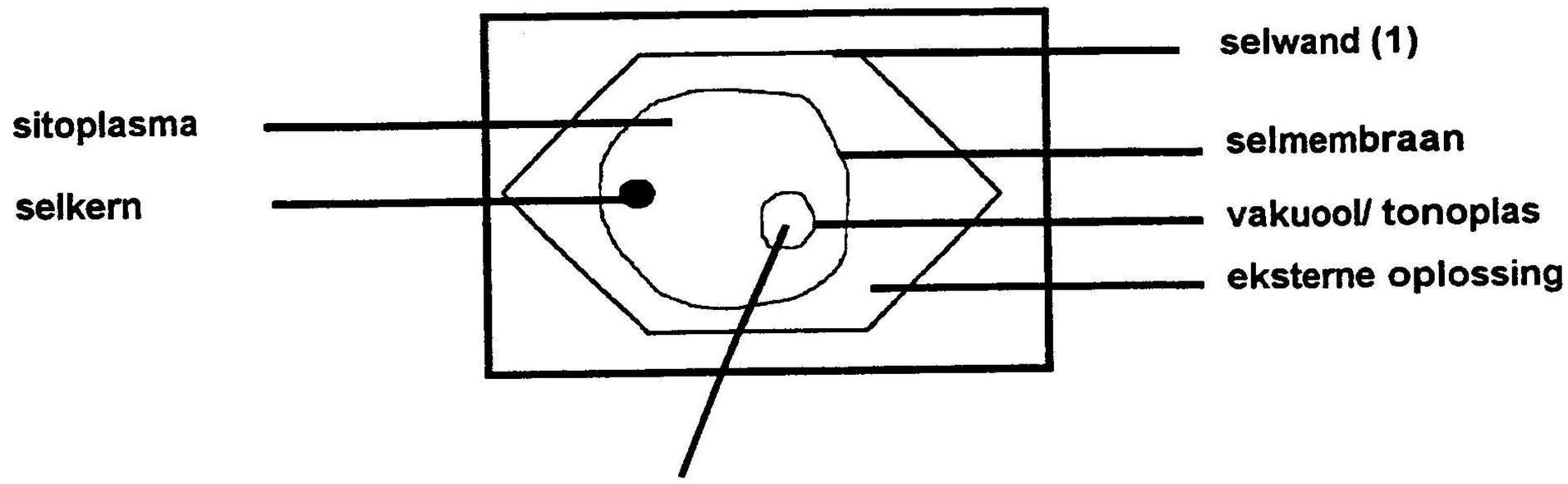
2.2.3

- humiditeit (1)
- temperatuur (1)
- ligintensiteit(1)
- wind (1)
- lugdruk (1)

enige (3)
(7)

6

2.3



Verpligte punte:

selwand (1)
oorspronklike vorm van sel (1)
spasie tussen selwand en selmembraan (1)
kleiner vakuool (1)

plus

enige ander drie korrekte byskrifte (vakuool word net eenkeer gemerk)

(7)

[25]

VRAAG 3

3.1 Die verlies van water in dampvorm / verdamp (1)
vanaf die bogrondse dele (1)
hoofsaaklik deur stomata / lentiselle (1) **(3)**

3.2

- ingesinkte huidmondjies / stomata (1)
- minder / (geen) / stomata (1)
- dik kutikula (1)
- dik epidermis (1)
- klein / saamgestelde oppervlakarea (1)
- blare gewysig tot dorings (1)
- hare / trigome / skubbe (1)
- dik / melksap (1)

(enige) (4)
(merk eerste vier)

3.3

3.3.1 akkedis (1) (1)

3.3.2 die liggaamstemperatuur varieer (1) met die van die omgewing (1)
is amper totaal van die omgewing afhanklik (1) vir sy liggaamshitte (1)
enige (2)

3.3.3 (i) aanvaar enige antwoord vanaf 14 –16 **(1)** ^{0}C **(1)** (2)
(ii) aanvaar enige antwoord vanaf 36 - 38 **(1)** ^{0}C **(1)** (2)

3.3.4

- Die akkedis orienteer sy liggaam parallel met die sonstrale (1)
- of trek sy bene onder die liggaam in (1)
- wat sy blootstelling aan die son verminder (1)
- Lig twee pote op vanaf die grond / vir minder kontak met substraat (1)
- Die akkedis gaan in die skaduwee / kruip in onder rotse / grawe hom in onder die sand (1)
- en absorbeer dus minder hitte (1)

enige (3)

3.3.5

- Die sweettempo (1) neem toe (1) / sweetkliere is meer aktief (1)
- Meer sweet word geproduseer (1)
- Soos sweet verdamp (1)
- koel die vel af (1)
- en verlaag gevolglik die temperatuur (1) **enige**(3)

(13)

3.4

- Ontvang sensasies vanaf sinsorgane (1)
- Beheer hoër denkprosesse (1)
- Beheer oordeelsvermoë / intelligensie / geheue (1)
- Sentrum vir emosies en bewussyn (1)
- Beheer willekeurige handelinge (1)
- Verantwoordelik vir spiertonus / balans en ewewig (1)
- Skei hormone af (1)
- Bevat refleksentrums / beheer onwillekeurige handelinge (1)

(merk eerste 5) (5)
[25]

8

VRAAG 4

4.1

4.1.1 B sensoriese neuron / monopolêr / afferent / dendriet (1)
E verbindingsneuron / interneuron / multipolêr / akson (1) (2)

4.1.2 Sal die hitte voel (1) maar nie instaat wees om op stimuli te reageer nie (1) en gevolglik kan vinger / vel brand (1) **(enige)** (2)

4.1.3 Ontvang stimuli / verander stimuli na 'n impuls (1)

4.1.4 (D) (1)
die streek bevat die ganglion /
die streek bevat die dorsale wortelvan die rugmurg /
dit is die streek waar die sensoriese neuron die rugmurg binnekom /
die streek bevat die dorsale voue **enige** (1 x 2) (3)
(8)

4.2.1 C lens (1)
E optiese senuwee / oogsenuwee (1) (2)

4.2.2 (i) B (1)
(ii) D (1)
(iii) G (1) (3)

4.2.3 kan vorm verander / elasties / jellieagtig (1)
is deurskynend (1)
konveks / bolvormig / breek / buig lig (1)
geleë in die direkte pad van ligstrale (1)
enige (3)

4.2.4 B (1)
Aanvanklik was die deursnit van die pupil van persoon 1 klein (1)
Persoon 1 beweeg na 'n gebied met lae ligintensiteit (1)
Daarom vergroot die deursnee van die pupil (1)
Sodat meer lig die oog binnedring (1)
Sodoende word 'n duidelike beeld gevorm (1) **enige** (3) (4)
(12)

4.3

4.3.1 byniere / adrenaalkliere / supra renaalklier (1)
4.3.2 adrenalien (1)
4.3.3 glukagon (1)
4.3.4 glukose (1)
4.3.5 tiroksien (1)
(5)
[25]

VRAAG 5

5.1

5.1.1 B nieraar / niervene / renale vene (1)
F uretra (1) (2)

5.1.2 - proteïene (1)
aminosure (1)
glukose (1)
vitamiene (1)
enige (2)

5.1.3 stoor urien (1)

5.1.4 Beheer die beweging van urien uit die blaas uit (1)

5.1.5
- ekskresie / uitskeiding (1)
- osmoregulering (1)
- reguleer pH (1)
- reguleer soutinhoud / ioonregulering (1)

enige(3)
(merk eerste drie) **(9)**

5.2

5.2.1 A afferente / toevoerende (1) arteriool
B efferente / afvoerend (1) arteriool
C glomerulus / kapillêre vat / bloedhaarvaatjies (1)
D kapsel van Bowman (1) (4)

5.2.2 4 - 5 **(1)** mm **(1) OF** 0.4 – 0.5 **(1)** cm **(1)** (2)

5.2.3 A het 'n groter / wyer deursnee (1) terwyl B 'n kleiner / nouer deursnee het (1)
OF A het 'n groter / wyer (1) deursnee as B (1)
Dit laat die druk in die glomerulus toeneem (1)
vir filtrasie (1) (4)

5.2.4 ureum (1), uriensuur (1), water (1), glukose (1), aminosure (1), soute (1), vitamienis (1), kreatien / kreatinien (1), hippuursuur (1) toksiene / gifstowwe (1) / hormone (1)
(merk eerste vier) enige(4)

5.2.5 (i) kubiese / epiteel (1)
(ii) plaveisel / epiteel / podosiet (1) (2)
(16)
[25]

GROOTTOTAAL : 150