

POSSIBLE ANSWERS FOR:

BIOLOGY HIGHER GRADE PAPER 2

SECTION A

QUESTION 1

1.1	1.1.1	B		
	1.1.2	D		
	1.1.3	D		
	1.1.4	A		
	1.1.5	B		
	1.1.6	B		
	1.1.7	D		
	1.1.8	A		
	1.1.9	B		
	1.1.10	C	(10 × 2)	(20)
1.2	1.2.1	Hypothalamus/Medulla oblongata		
	1.2.2	Thyroxin		
	1.2.3	Myelin sheath		
	1.2.4	Guttation/Transpiration		
	1.2.5	Turgor pressure/Turgor		
	1.2.6	Osmotic potential		
	1.2.7	Lymph		
	1.2.8	Hibernation/Dormancy/winter sleep		
	1.2.9	Ring question number and give one mark as (+1)		
	1.2.10	Renal capsule/Capsule	(10 × 1)	(10)
1.3	1.3.1	G		
	1.3.2	E/H		
	1.3.3	I		
	1.3.4	C		
	1.3.5	A	(5 × 2)	(10)
1.4	1.4.1	A and B		
	1.4.2	A and B		
	1.4.3	Neither/none	(3 × 2)	(6)
1.5	1.5.1	Auxins / IAA		(1)
	1.5.2	Shaded / unilluminated / darker/opposite/left side		(1)
	1.5.3	Elongation / growth/cell division/mitosis		(1)
	1.5.4	Inhibited /normal /retarded /slowed down/decreased		(1)
	1.5.5	Curvature/bending/movement/growth/response.		(1)
	1.5.6	Phototropism /Phototropic		(1)

1.5.7	Geotropism/Gravitropism		(1)
1.5.8	Meristem		(1)
		(8 × 1)	(8)
1.6	1.6.1	1 (1) Solution in which cell was placed/Hypertonic solution/ Plasmolysing solution/External solution/(1) label 1 should point to inside of cell membrane. (1)	(1)
	1.6.2	2 (1) Level of the water must be the highest in the thin tube/level of the water must be lowest in the thick tube	
	1.6.3	3 (1) Water	(1) (6)
			(1)
		(3 × 2)	
			[60]

SECTION B

QUESTION 2.

2.1	2.1.1	1. (Intercellular) air space/ (sub stomatal) air chamber (1) 2. Vacuole/cell sap (1) 3. Tonoplast/vacuole (1) 4. Chloroplasts/ any named organelle/organelles/nucleus (1)	(4)
	2.1.2	A. Transpiration (1 × 2)	(2)
	2.1.3	B. Osmosis/Diffusion, C Evaporation/ Diffusion D Transpiration/ Evaporation/ Diffusion (1 + 1 + 1)	(3)
	2.1.4	(i) Potometer (1) (ii) By determining/ measuring the time taken for a air bubble/ By determining the rate of absorption of water (1) to move from one point to another under controlled conditions/differing environmental conditions (1) and comparing this with the time taken under normal conditions (1)	(3)

2.1.5

Any acceptable correctly labelled apparatus/ experiment.

Marks allocated as follow:

Example of hypotonic solution (eg water) (2)

Example of hypertonic solution (eg glucose / living tissue) (2)

Presence of living tissue or representation of a membrane (eg dialysis membrane) (1)

Apparatus will work (1)

Clarity of the drawing (1)

- 2.1.6 Water moves from a high water potential (1) through the differentially permeable membrane (1) to the low water potential (1). One mark for the result/ any suitable explanation based on the the drawing in Question 2.1.5 (4)

2.1.7

Mesophyte	Xerophytes
1. Thin cuticle	1. Thick cuticle
2. Normal stomata	2. Sunken stomata
3. Hairs, scales few or absent	3. Hairs, scales
4. Many stomata	4. Fewer stomata
5. Larger leaf surfaces	5. Smaller leaf surfaces
6. Leaves present	6. Leaves modified in to spines

Marks allocated per pair not ONE column only.

Any 4 × 2

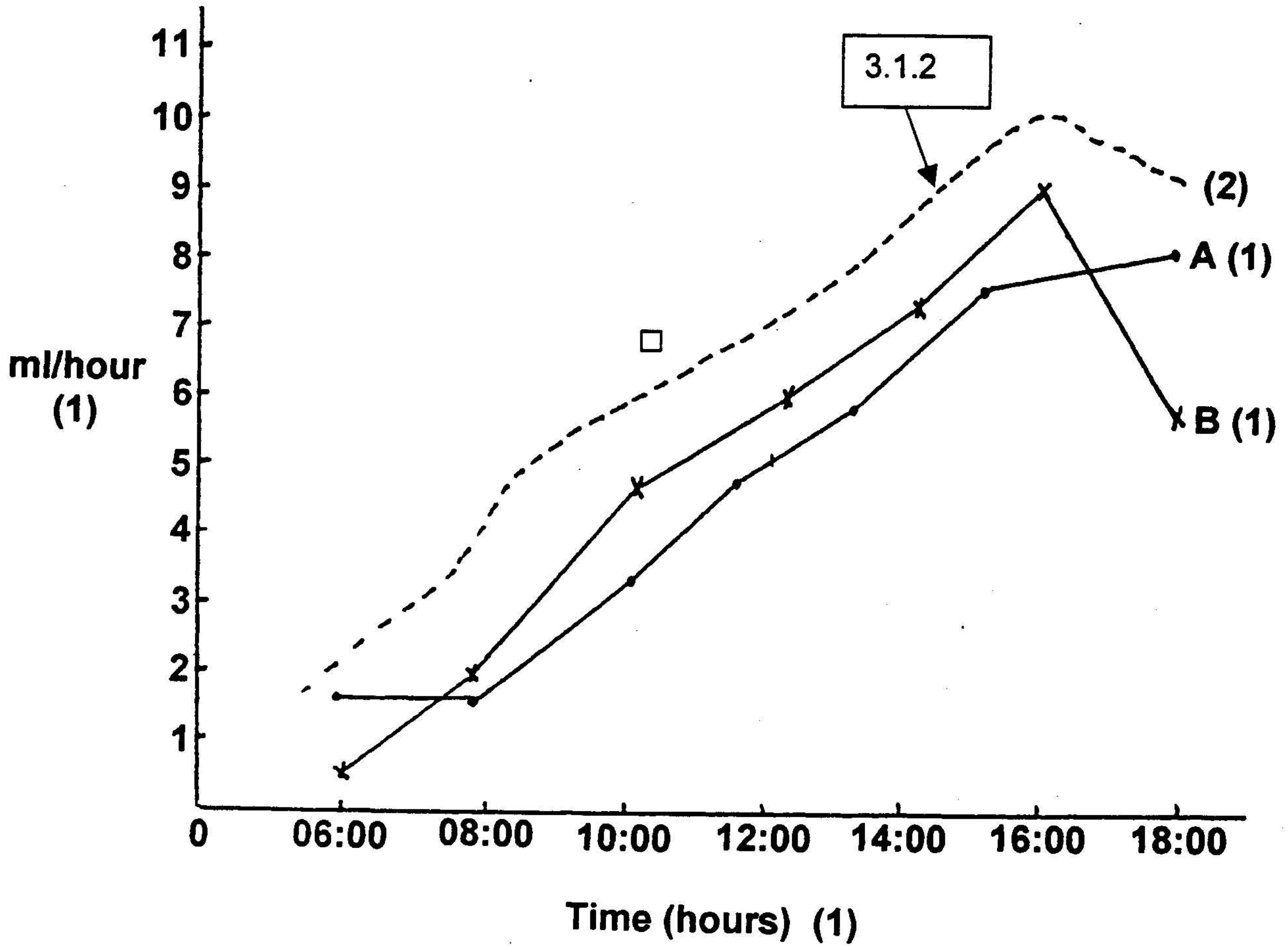
(8)

- 2.1.8 When raining the humidity rises (1) causing a high concentration of Water vapour outside the plant (1), resulting in the diffusion process slowing down. (1) (3)

[35]

QUESTION 3

3.1 3.1.1



Scale (1) X axis with the title(1), Scale (1) Y axis with title(1) graph A (1) and graph B (1)

3.1.3 Between 06:00 and 08:00 (1) there is a significant increase in the transpiration rate (1) (2)

3.1.4 16h00 (1)

3.1.5 There is nett loss. (2)
 Total water absorbed: =1,5 +1.5 +3.2 +4.5 +5.7 +7.6 +8.0=32ml (1)
 Total amount water transpired = 0.5 +2.0 +4.5 +6.0+7.4 +9.3 +5.5 =35.2ml (1) (4)

OR difference in average water loss (2)

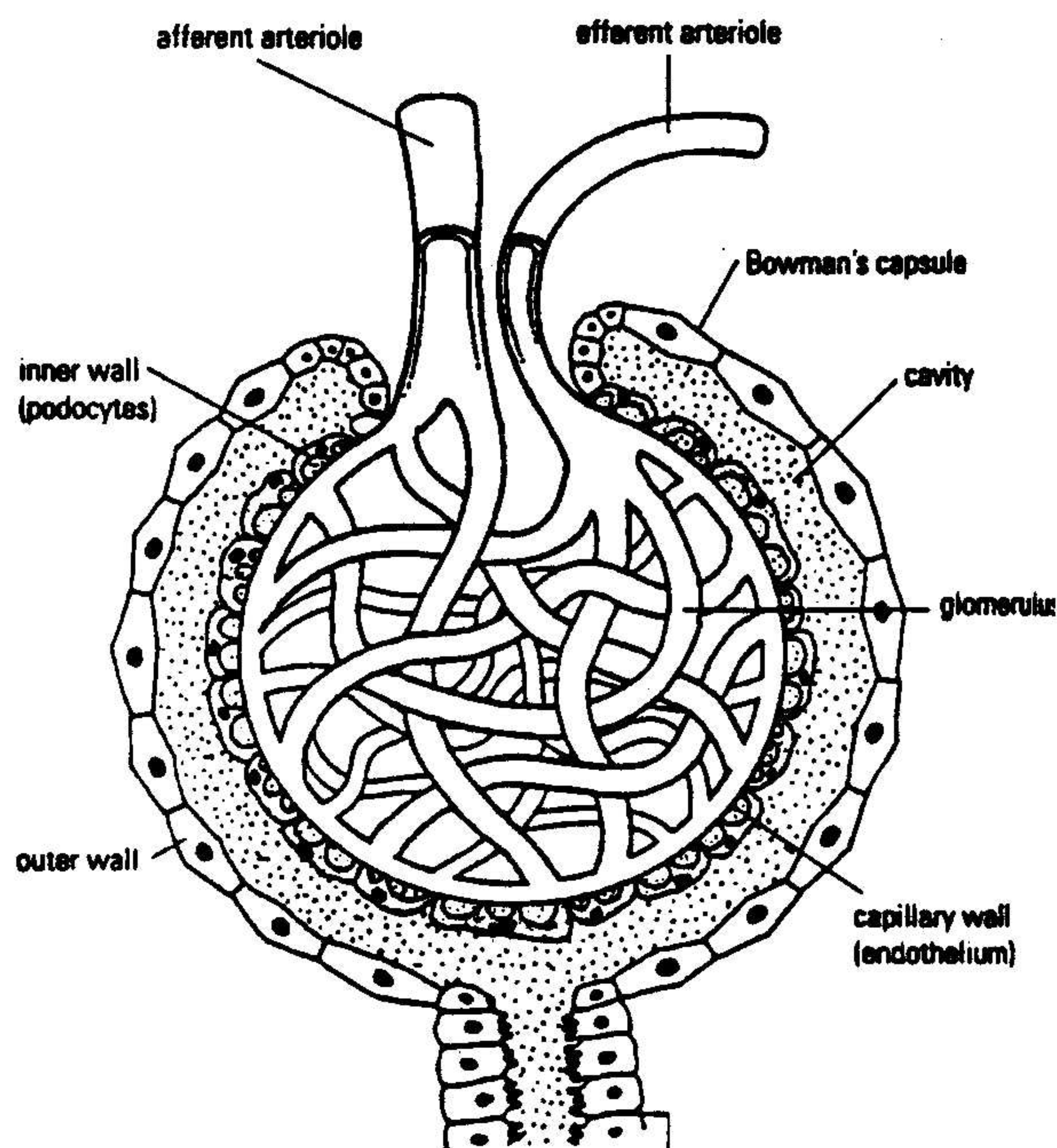
- 3.2 3.2.1 4-(Renal)calyx /pyramid/tubules/Ducts of Bellini/papillae (1)
 5-Pyramids/ renal tubules/Ducts of Bellini (1)
 8((Renal) pelvis/ /ureter (1) (3)
- 3.2.2 Ureter/ Renal pelvis/ Renal calyx/ Renal pyramids/collecting tubule (1)
(any 1)
- Urea/ salts are present (1)
 Glucose/amino acids are reabsorbed (1). (3)
 Proteins are macromolecules not found in urine (1).
- 3.2.3 Renal artery / 11 OR cortex/ 2 (1)
 The blood entering the kidney (1) contains urea/ waste products,
 glucose, salts and proteins/useful substances (1) to be filtered by (3)
 kidney. (1)
- 3.2.4 (i) 3/4/5
 (ii) 2
 (iii) 3/4/ 5 (3)
- 3.2.5 Osmoreceptors are influenced (1) by a drop in the osmotic
 pressure/ water content of the blood/low water potential of the
 blood (1)/ when a person loses water and on a hot day due to
 sweating (1).
 These receptors stimulate the hypophysis /pituitary gland/ master
 gland (1) to secrete more ADH (1). The tubule becomes more
 permeable (1) more water is reabsorbed (1) from the distal
 convoluted tubules (1) and collecting duct (1) and the urine gets
 more concentrated / more hypertonic (1) (6)
 ensuring the correct osmotic balance is maintained (1) **(any 6)**

[35]

QUESTION 4

- 4.1 4.1.1 Differentially permeable/ selectively permeable/semi-permeable/
Must not allow proteins to pass through (1)
- 4.1.2 To ensure a large contact surface area (1) for osmosis in the
bathing fluid (1) to allow longer time for the blood to be filtered (1)
(any 2) (2)
- 4.1.3 Plasma proteins (1)/ fibrinogen/ albumin/ globulin (1) (any 1) (1)
- 4.1.4 Water (1), (glucose) (1), (amino acids) (1), urea(1)/ uric acid (1) /
creatinine (1)/ ammonia (1) hippuric acid(1), (water soluble
vitamins) (1) (any 2) (2)
- 4.1.5 To provide the correct osmotic balance (1) to supply a
concentration gradient (1) for osmosis (1) / to prevent essential
salts from being removed from the blood (any 2) (2)

4.2



(correctness drawing 1+ labelling 7) (8)

If whole nephron is drawn mark only the glomerulus.
Afferent arteriole must be thick and efferent arteriole must be thin.
If not lose mark for correctness.

- 4.3 4.3.1 The body temperature of ectotherms varies with the
environmental temperature (1)
Ectotherms are less active at low temperatures / ectotherms slow
down their behaviour at low temperatures (1) When environmental
temperature is low, body temperature is not at its optimum for
enzyme action (1). Therefore the metabolic rate is very low (1).

OR Endotherms need to respire more(1) therefore need more

(3)

oxygen (1) in order to generate heat (1) to maintain the body temperature (1) (any 3)

4.3.2 Endotherms (1)

4.3.3 They must maintain a constant internal temperature at all times (1) irrespective of environmental temperature changes (1)
At low environmental temperatures the body temperature drops temporarily (1) and more heat energy is required to maintain a constant body temperature (1) (any 3) (3)

4.3.4 35 to 38 °C/body temperature/ 25 to 40 (from the graph) (1)

These environmental temperatures are very near to body temperature (2) / are sufficient for optimum enzyme action. (2) / No need to produce and use up more energy to keep temperature constant. (2) / This is the temperature at which oxygen consumption is the least (2) (any 2) (2)

4.4 Semi-circular canals / cristae/ ampullae (1)
they lie in three planes, each perpendicular to the next (1)/
this enables them to register sudden movements in any direction. (1)

Maculae /Otolith (1)
They contain crystalline granules which act as receptors in response to changes in the force of gravity (1).

OR

saccule/utricle (1)
Receptors (1) in the utricle and saccule provide the sensations of gravity and acceleration (1)
(Any two examples 2 marks+ 2 for the explanation) (4)

4.5 4.5.1 Pressure on both sides of the tympanic membrane cannot be equalized. (1)
Eardrum may burst/normal functioning of the ear affected. (1)/
Vibrations of ossicles distorted and the person is unable to hear properly (1) (3)

4.5.2 It prevents normal vibrations (1)of the ossicles hindering the vibrations transferred to the oval window, (1)
causing deafness (1)
Interferes with the amplification process (1) (any 2) (2)

[35]

SECTION C

- 5.1 5.1.1 When the ball leaves the bowlers hand , the eye is accomodated for distant vision/ lens is flat (1)
 The batsman keeps his eyes focused through accomodation (1)
 To get a sharp image of the ball the light rays must be focused onto the retina (1) /Light rays reflected from the ball can be focused onto the retina for a clear image (1)
 The ciliary muscles contract (1)and the ciliary body move closer to the lens (1)
 the suspensory ligaments become slack (1)
 the lens becomes thicker and shorter / become more convex (1).
 The refractive power of the lens is increased (1)
 so that the batsman sees a clear ball to hit /to see a clear image(1)
 The pupil is larger as a result of the dim light after sunset (1) (8)
(any 8)
- 5.1.2 (i) 3,8 mm (2)
- (ii) In dim light (1)
 the radial muscles of the iris contract (1)
 the circular muscles relax (1)
 the pupil becomes larger (1)
 and the amount of light entering the eye is increased (1) (5)
- (iii) It is an automatic (involuntary) response (1)
 to a stimulus (1)/ the person is not aware (1) of the changes that took place (1) (2)
- 5.2 The person hear /see the hissing snake / stimulus (1)
 which is converted by the eye/ ear to an impulse (1)
 and is carried by the optic/auditory nerve (1)
 to the brain (1)
 where the impulse is interpreted (1)
 The balance of the body is retained by the semicircular canals/ utricle/ saccule/ proprioceptors (1)
 The brain initiates a reflex action (1)
 resulting in the following: **max (5)**
- The adrenal glands(1) is stimulated by the autonomic nervous system (1)
 which secretes adrenalin (1).
 It increase the rate of the heart beat (1)
 and the blood pressure rises (1).
 It causes the blood vessels in the skin to constrict (1) and the hair to stand erect (1) and the blood vessels to the brain to dilate (1). It increases the rate and depth of breathing (1).
 It causes the glycogen (1) in the liver and muscles (1)

to be converted to glucose (1)
under the influence of glucagon (1)
The glucose is released into the blood stream (1)
which supplies additional energy (1)
for the increased metabolic rate (1)

The person can urinate (1), suffer from diarrhea (1), the mouth become dry (1), sweat is secreted on the forehead /hands (1).
More energy is released for muscle activity (1) during the avoiding reaction(1)

max (10)

Content 15

Synthesis-3

- 3-most facts are included and presented logically
- 2- most facts are included and not presented logically
- 1- some facts only
- 0 – very few facts

(18)
[35]
200

TOTAL:

MOONTLIKE ANTWOORDE VIR

BIOLOGIE HG VRAESTEL 2

AFDELING A.

VRAAG 1

1.1	1.1.1	B		
	1.1.2	D		
	1.1.3	D		
	1.1.4	A		
	1.1.5	B		
	1.1.6	B		
	1.1.7	D		
	1.1.8	A		
	1.1.9	B		
	1.1.10	C	(10 × 2)	(20)
1.2	1.2.1	Hipotalamus / medulla oblongata / verlengde rugmurg		
	1.2.2	Tiroksien		
	1.2.3	Miëlienskede / murgskede		
	1.2.4	Guttasie / transpirasie		
	1.2.5	Turgor / turgordruk		
	1.2.6	Osmotiese potensiaal		
	1.2.7	Limf		
	1.2.8	Hibernering / dormant / dormansie / winterslaap		
	1.2.9	Omkring vraagnommer en gee die punt as (+1)		
	1.2.10	Nierkapsule / kapsel	(10 × 1)	(10)
1.3	1.3.1	G		
	1.3.2	E / H		
	1.3.3	I		
	1.3.4	C		
	1.3.5	A	(5 × 2)	(10)
1.4	1.4.1	A en B		
	1.4.2	A en B		
	1.4.3	Nie een van die twee / Geen	(3 × 2)	(6)
1.5	1.5.1	Ouksiene / IAS		(1)
	1.5.2	Skadukant / onbeligte kant / donkerkant / teenoorgestelde kant / linkerkant		(1)
	1.5.3	Verlenging / groei / seldeling / mitose		(1)
	1.5.4	Inhibeer / normaal / vertraag / verminder / stadiger		(1)
	1.5.5	Kromming / buiging / groei / beweging / positiewe respons / reaksie		(1)
	1.5.6	Fototropisme / fototropies		(1)

Blaai asseblief om

1.5.7	Geotropisme / gravitropisme		(1)
1.5.8	Meristeem		(8)
		(8 × 1)	
1.6	1.6.1	1 (1) Die oplossing waarin sel geplaas was/Hipertoniese oplossing / oplossing vir plasmolise / eksterne oplossing / byskrif 1 moet binne die selmembraan wys (1)	
	1.6.2	2 (1) Vlak van die water moet die hoogste wees in die dun buis (1) / die vlak moet die laagste wees in die dik buis (1)	(6)
	1.6.3	3 (1) Water (1)	
			[60]

AFDELING B

VRAAG 2

2.1	2.1.1	1. (Intersellulere) lugspasie/(substomaterre) lugkamer	(1)	
		2. Vakuool/selsap	(1)	
		3. Tonoplas/vakuool	(1)	
		4. Chloroplaste / nucleus / kern / organel/ enige genoemde organel.	(1)	(4)
	2.1.2	A. Transpirasie	(1x2)	(2)
	2.1.3	B. Osmose / diffusie	(1)	
		C. Verdamping /Diffusie	(1)	
		D. Transpirasie/verdamping / diffusie	(1)	(3)
	2.1.4	(i) Potometer		(1)
		(ii) Om die tyd/die tempo van absorpsie van water, vas te stel wat 'n lugborrel neem (1) van een punt na 'n ander onder beheerde toestande / verskillende omgewingstoestande (1) en dit te vergelyk met die tyd geneem onder normale omstandighede (1) / enige ander toepaslike beskrywing.		(3)

2.1.5.

- Enige aanvaarbare korrek benoemde apparaat/eksperiment. (2)
 Punte word soos volg toegeken: (2)
 Voorbeeld van 'n hipotoniese oplossing (bv water) (2)
 Voorbeeld van 'n hipertoniiese oplossing (bv glukose/lewende weefsel) (1)
 Die teenwoordigheid van lewende weefsel of die voorstelling van 'n membraan (bv dialise membraan) (1)
 Apparaat sal werk? (1)
 Duidelikheid van tekening (7)

Of enige ander aanvaarbare korrek benoemde apparaat / eksperiment

- 2.1.6 Water beweeg van 'n hoër waterpotensiaal (1) deur die differensieeldeurlaatbare membraan (1) na die laer waterpotensiaal.(1) Een punt vir die resultaat (1). / enige toepaslike beskrywing volgens die antwoord in 2.1.5 (4)

2.1.7

Mesofiet	Xerofiet
1. Dun kutikula	1. Dik kutikula
2. Normale stomata / huidmondjies	2. Gesonke ingesinkte stomata
3. Hare, skubbe min/afwesig	3. Hare, skubbe teenwoordig
4. Baie stomata	4. Minder stomata
5. Groter blaaroppervlak	5. Kleiner blaaroppervlak
6. Blare teenwoordig	6. Blare gewysig tot dorings

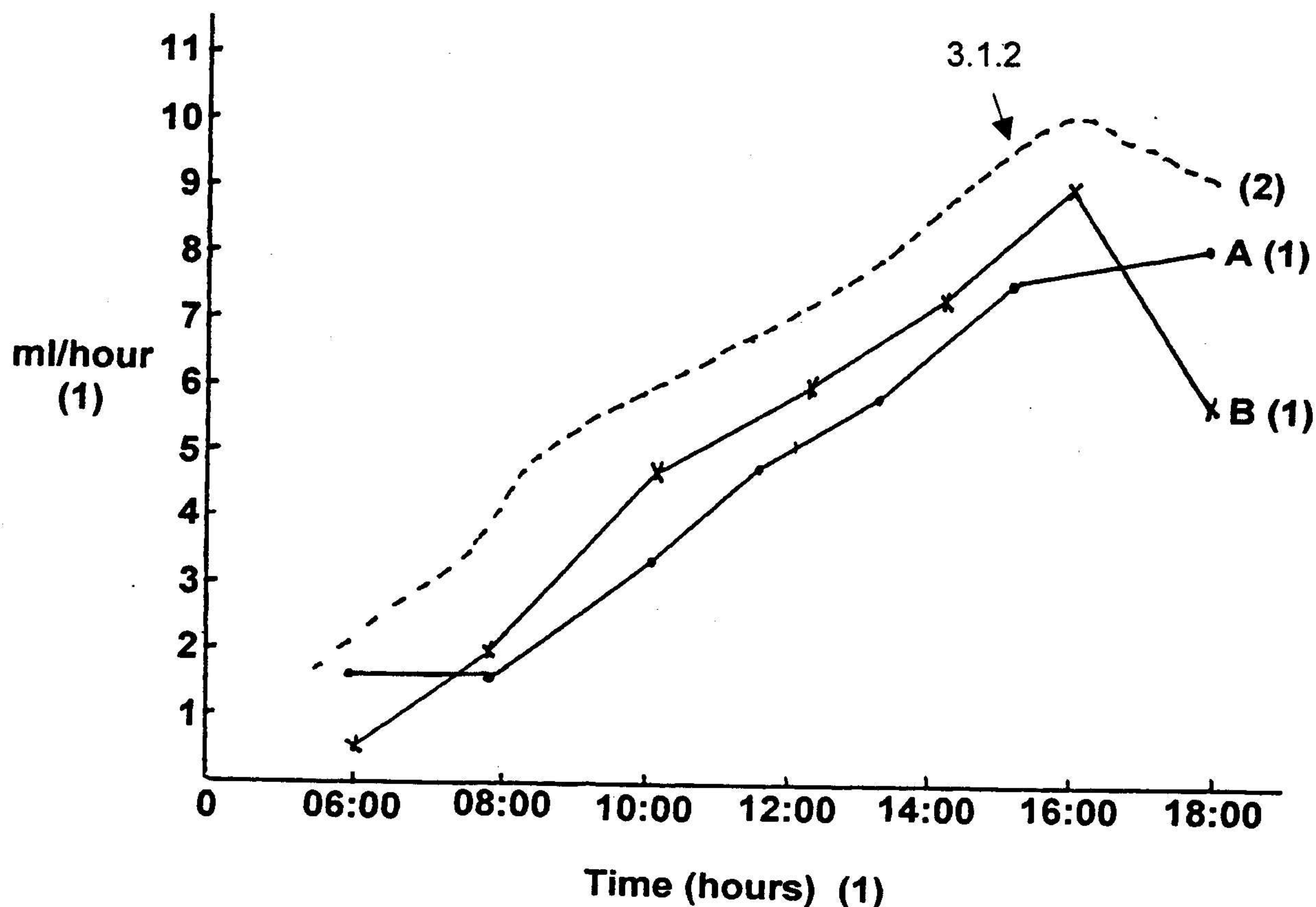
Enige 4 x 2 (8)

- 2.1.8 Wanneer dit reën sal die humiditeit verhoog (1) en die waterdamp - konsentrasie buite die plant verhoog (1), wat veroorsaak dat die diffusie – proses sal afneem (1) (3)

[35]

VRAAG 3

3.1 3.1.1



(Skaal (1) X as met die titel (1), Skaal (1) Y as met titel (1) grafiek A (1) en grafiek B (1)

(2)

3.1.3 Tussen 6:00 en 8:00 (1) want daar is 'n merkwaardige styging in transpirasie tempo (1)

(2)

3.1.4 16:00

(1)

3.1.5 Daar is 'n netto verlies (2)

Totale hoeveelheid water geabsorbeer = 1.5

+1.5+3.2+4.5+5.7+7.6+8.0 = 32 ml (1)

Totale hoeveelheid water getranspireer = 0.5 +2.0+4.5+

6.0+7.4+9.3+5.5 = 35.2 ml (1) OF verkil in gemiddelde waterverlies

(4)

3.2 3.2.1 4 (Nier)kelk / piramide / nierbuis / pappille / Buis van Belini (1)

Blaai asseblief om

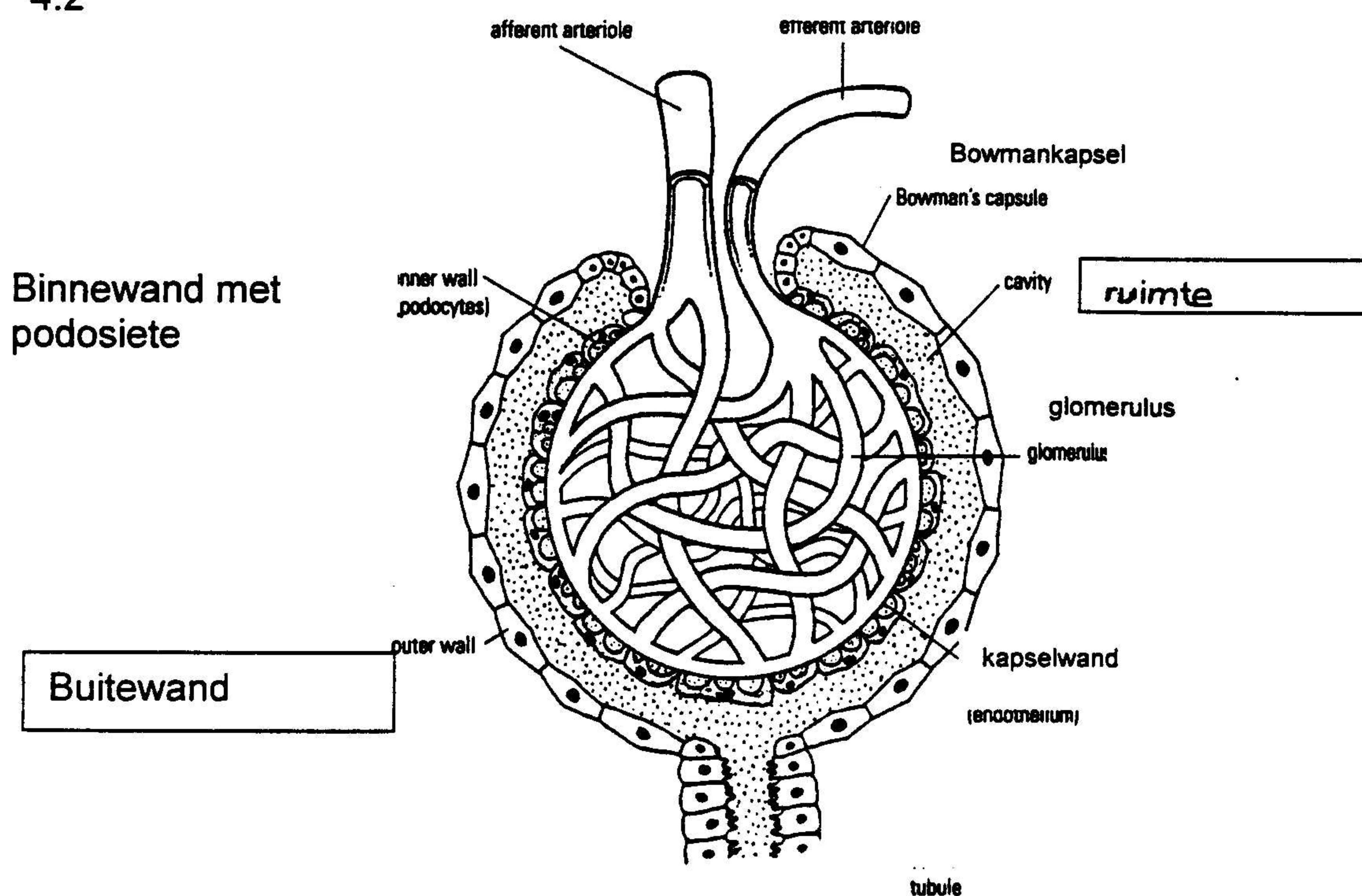
- 5 Piramiedes / nierbuis / Buise van Bellini (1)
- 8 (Nier)pelvis / (nier)bekken / ureter / urienleier (1) (3)
- 3.2.2 Ureter/Nierpelvis/Nierkelk/Nierpiramiedes/Versamelbuis
enige (1) (1)
 Ureum / soute is teenwoordig (1)
 Glukose / aminosure is geherabsorbeer (1).
 Proteiene is makromolekules wat nie in uriene aangetref word nie (3)
 (1)
- 3.2.3 Nierslagaar/11/Korteks/2 (1)
 Die bloed wat in die nier ingaan (1) bevat ureum/afvalprodukte en
 glukose, soute en proteiene / nuttige stowwe (1) wat deur die nier
 gefiltreer word(1) (3)
- 3.2.4 (i) 3/4/5
 (ii) 2
 (iii) 3/4/5 (3)
- 3.2.5 Osmoreseptors word beïnvloed (1)
 deur 'n daling in die osmotiese druk / waterinhoud /
 waterpotensiaal (1)
 wanneer 'n persoon water verloor deur te sweat op 'n warm dag(1)
 Hierdie reseptore stimuleer die hipofiese /pituitere klier/
 meesterklier (1)
 om meer ADH af te skei (1)
 nierbuis word meer deurlaatbaar (1)
 Meer water word geherabsorbeer (1) (6)
 vanaf die distale kronkelbuis (1) en versamelbuis (1)
 en die urine word meer gekonsentreer / meer hipertopies (1) [35]
 wat die korrekte osmotiese balans handhaaf (1) **(enige 6)**

VRAAG 4

- 4.1 4.1.1 Differensieel deurlaatbaar/halfdeurlaatbaar/selektiefdeurlaatbaar/
 semi – deurlaatbaar/ (1)
 Moet nie proteïenmolekule laat deurgaan nie
- 4.1.2 Om seker te maak dat 'n groter kontakoppervlak (1)
 vir osmose in die badvloeistof verseker word(1)
 om 'n langer tyd toe te laat vir die bloed om filtreer te word (1)
(enige 2) (2)
- 4.1.3 Plasmaproteïene bv fibrinogeen / albumien / globulien(1) **(enige 1)** (1)

- 4.1.4 Water(1), (glucose) (1), (aminosure)(1) ureum/uriensuur (1), kreatinien (1), ammonium (1), hippuursuur (1), (wateroplosbare vitamieene)(1) **(enige 2)** (2)
- 4.1.5 Om korrekte osmoties balans te handhaaf (1) om 'n konsentrasiegradient te veroorsaak (1) vir osmose (1), om te verhoed dat noodsaaklike soute van die bloed verwyder word. (1) (2)

4.2



(Korrekheid 1 + byskrifte 7)

Indien die hele nefron geteken is merk slegs die glomerulus .
Afferente arteriool moet dik wees en die efferente arteriool moet dun wees – indien nie, verloor die punt vir korrekheid.

- 4.3 4.3.1 Die liggaamstemperatuur van ektotermiese diere varieer met die omgewingstemperatuur (1) .
Ektotermiese diere is minder aktief in koue of lae temperature / ektotermiese diere se gedragaktiwiteit is minder (1)
Wanneer die omgewingstemperatuur laag is ,is die liggaamstemperatuur nie by 'n optimum vir ensiemwerking nie (1) daarom is die metaboliese tempo baie laag (1) **OF**
endotermiese diere moet meer respireer (1) dit wil sê hulle het meer suurstof (1) nodig om hitte in die liggaam op te wek (1) om hulle liggaamstemperatuur te handhaaf. **(enige 3)**

Blaai asseblief om

(3)

4.3.2 Endoterme diere. (1)

4.3.3 Hulle moet 'n konstante interne temperatuur handhaaf te alle tye (1)
onafhanklik van verandering in omgewingstemperatuur (1)
By lae omgewingstemperatuur val die liggaamstemperatuur tydelik
(1) en meer hitte energie word benodig om 'n konstante
temperatuur te handhaaf. (1) **(enige 3)** (3)

4.3.4 35 tot 38 °C / liggaamstemperatuur / 25 tot 40 (volgens grafiek) (1)

Hierdie omgewingstemperatuur is baie na aan die
liggaamstemperatuur (2)/
en is voldoende vir optimale ensiemwerking (2)/ nie nodig om meer
energie te produseer en te verbruik om die temperatuur konstant te
hou nie (2)/dit is die temperatuur waarby suurstofverbruik die
laagste is (2) **(enige 2)** (2)

4.4 Semisirkulêre kanale/halfsirkelvormige kanale)/ampulla/krista(1)
lê in drie vlakke, elk loodreg tot die volgende, (1)
dit verseker dat skielike bewegings geregistreer word uit enige rigting (1)

Otoliete /makula(1)
Hulle bevat kristalkorrels wat as reseptore dien
in reaksie op die gravitasiekrag veranderinge (1)

OF

Sakkie / blasie (1)
Reseptore (1) in die sakkie en blasie voorsien die sensasie van swaartekrag
en versnelling (1) (4)

(Enige 2 voorbeelde 2 punte + 2 vir verduideliking)

5 4.5.1 Die druk aan beide kante van die oordrom kan nie eweredig
gereguleer word nie. (1)
Die oordrom kan bars/normale funksionering van die oor word
geaffekteer. (1) /
Vibrasies van gehoorbeentjies is versteur en dit het tot gevolg dat
nie goed gehoor word nie (1) (3)

4.5.2 Dit voorkom die normale vibrasies (1) van die gehoorbeentjies

Blaai asseblief om

wat die vibrasies verhinder om oorgedra te word op die ovale venster (1), wat doofheid teweeg bring.(1)

Dit beïnvloed die klankversterkingsproses (1)

(enige 2)

(2)

[35]

AFDELING C

- 5.1 5.1.1 Wanneer die bal die bouler se hand verlaat is die oog ge -
akkomodeer vir verisie/die lens is plat (1)
Die kolwer hou sy oë gefokus deur akkomodasie (1)
Om 'n skerp beeld van die bal te kry moet die ligstrale
gefokus word op die retina. (1) /Ligstrale geweerkaats vanaf die bal
kan gefokus word op die retina
vir 'n duidelike beeld (1)
Die siliere spier trek saam (1)
en die siliere liggaam beweeg nader aan die lens (1)
die spanning van die draagligamente verminder (1)
die lens word meer konveks/korter en dikker (1)
- Die refraksie of brekingkrag van die lens word verhoog(1)
sodat die kolwer die bal duidelik raaksien/om helder beeld te sien (8)
(1) Die pupil is groter as gevolg van dowwe lig na sonsondergang
(1) (enige 8)
- 5.1.2 (i) 3.8 mm (2)
(ii) In die dowwe lig (1)
die radialespiere van die iris trek saam (1)
die kringspiere verslap (1)
die pupil vergroot(1)
en die hoeveelheid lig wat die oog binnekom verhoog(1) (5)
(iii) Dit is 'n outomaties(onwillekeurig) respons (1) van 'n
Stimulus (1) ontvang deur 'n orgaan /die persoon is nie
bewus van die veranderinge wat plaasvind nie (1) (2)
- 5.2 Die persoon hoor/sien die sissende slang/stimulus(1)
wat deur die oor / oog omgeskakel word na 'n impuls (1)
en deur die gehoorsenuwee/oogsenuwee (1) na die brein (1)
vervoer word waar die impulse geïnterpreteer word.(1)
Die ewewig van die liggaam moet ook behou word deur die halfsirkelvormige
kanale /sakkie/blasie/proprioseptore (1)
Die brein inisieer 'n refleksreaksie (1) **MAKS 5**
- Die byniere (1) word gestimuleer deur die outonome senuweestelsel (1) wat

adrenaliën afskei.(1)

Dit verhoog die tempo van die hartslag (1) en verhoog bloeddruk(1)
 wat bloedvate van die vel sal vernou (1) en hare laat regop staan (1)
 en die bloedvate na die brein verwyd.(1)

Dit verhoog die tempo en diepte van die asemhaling (1)

Dit veroorsaak dat glikogeen (1) verander na glukose (1) deur glukagon (1) in
 die lewer en die spiere(1)

Die glukose word in die bloedstroom gestort (1)

wat dan addisionele energie voorsien (1)

vir die verhoogde metaboliese tempo (1)

Die persoon kan urineer (1), maagwerkings kan voorkom(1), die mond word
 droog (1), sweet op voorkop / hande(1) Meer energie word vrygestel vir

spieraktiwiteit (1) tydens die vermydingsreaksie (1)

MAKS 10

(18)

15 Inhoud

3 Sintese

Die 3 punte vir sintese moet as volg toegeken word:

3 - Meeste feite word verskaf en logies uiteengesit

2- Meeste feite genoem maar nie logies uiteengesit

1 - Noem slegs sommige feite

0 – Baie min feite

[35]

TOTAAL:

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