DEPARTMENT OF EDUCATION
REPUBLIC OF SOUTH AFRICA

DEPARTEMENT VAN ONDERWYS
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SENIOR CERTIFICATE EXAMINATION - 2004
SENIORSERTIFIKAAT-EKSAMEN - 2004

BIOLOGY P2
BIOLOGIE V2

HIGHER GRADE
HOËR GRAAD

OCTOBER/NOVEMBER 2004
OKTOBER/NOVEMBER 2004

306-1/2

Marks: 200
Punte : 200

2 Hours
2 Ure

This question paper consists of 19 pages.
Hierdie vraestel bestaan uit 19 bladsye.

BIOLOGY HG: Paper 2

306 1 2 HG

INSTRUKSIES EN INLIGTING AAN KANDIDATE

Lees die volgende noukeurig deur voordat die vrae beantwoord word:

1. Beantwoord AL die vrae.
2. Skryf AL die antwoorde in die ANTWOORDEBOEK.
3. Begin elke vraag se antwoord bo-aan 'n nuwe bladsy.
4. Nommer die antwoorde presies soos die vrae genommer is.
5. Skryf netjies en leesbaar.
6. Indien antwoorde nie volgens die instruksies van elke vraag aangebied word nie, sal punte afgetrek word.
7. ALLE tekeninge moet met potlood gemaak word en die byskrifte met ink.
8. Teken slegs diagramme en vloeidiagramme indien dit vereis word.
9. Die diagramme in die vraestel is nie noodwendig volgens skaal geteken nie.
10. Die gebruik van grafiekpapier is NIE toelaatbaar NIE.
11. Nie-programmeerbare sakrekenaars en passers mag gebruik word.

INSTRUCTIONS AND INFORMATION TO CANDIDATES

Read the following carefully before answering the questions:

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answer to each question at the top of a new page.
4. Number the answers exactly as the questions are numbered.
5. Write neatly and legibly.
6. If answers are not presented according to the instructions of each question, marks will be deducted.
7. ALL drawings should be done in pencil and labelled in ink.
8. Only draw diagrams and flow charts when requested to do so.
9. The diagrams in the question paper may not necessarily be drawn to scale.
10. The use of graph paper is NOT permitted.
11. Non-programmable calculators and compasses may be used.

AFDELING A

VRAAG 1

1.1 Verskeie moontlike antwoorde word vir elke vraag verskaf. Dui die korrekte antwoord aan deur slegs die **letter** van jou keuse langs die toepaslike vraagnommer te skryf.

1.1.1 Indien 'n jong sonneblomplant in 'n rooi oplossing geplaas en vir 2 ure in die son gelaat is, watter van die volgende dele van die stingel sal rooi kleur?

A Floëem
B Epidermis
C Xileem
D Korteks

1.1.2 Watter EEN van die volgende meganismes vir die regulering van liggaamstemperatuur word in sommige endotermiese, maar nie in enige ektotermiese dier aangetref nie?

A Hitte-uitruilmeganismes
B Kleur en liggaamsoriëntering
C Isoleringsmeganismes
D Sweet

1.1.3 Watter is die korrekte volgorde vir die vloei van urien?

A Blaas ⟶ nierbekken ⟶ uretra ⟶ ureter
B Nierbekken ⟶ ureter ⟶ blaas ⟶ uretra
C Ureter ⟶ blaas ⟶ nierbekken ⟶ uretra
D Uretra ⟶ nierbekken ⟶ ureter ⟶ blaas

SECTION A

QUESTION 1

1.1 Various possible answers are provided for each question. Indicate the correct answer by writing only the **letter** of your choice next to the question number.

1.1.1 If a young sunflower plant was placed in a red solution and left in the sun for 2 hours, which of the following parts of the stem will turn red?

A Phloem
B Epidermis
C Xylem
D Cortex

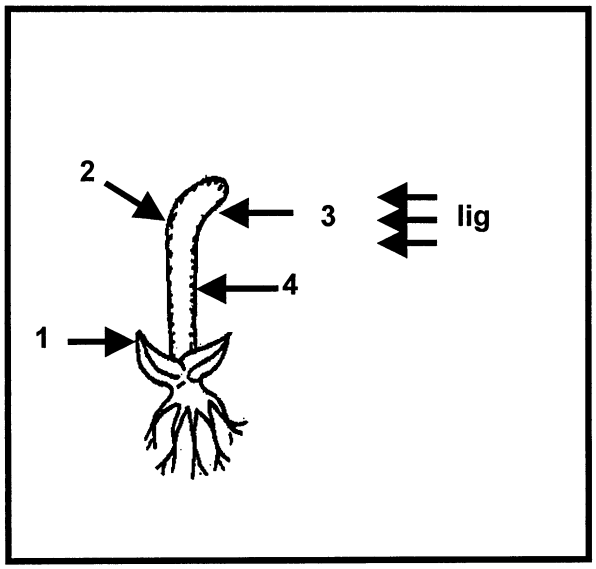
1.1.2 Which ONE of the following mechanisms for the regulation of body temperature is found in some endotherms, but not in any ectotherm?

A Heat exchange mechanisms
B Colour and body orientation
C Insulating mechanisms
D Sweating

1.1.3 Which is the correct sequence/order for the flow of urine?

A Bladder → renal pelvis → urethra → ureter
B Renal pelvis → ureter → bladder → urethra
C Ureter → bladder → renal pelvis → urethra
D Urethra → renal pelvis → ureter → bladder

VRAAG 1.1.4 en 1.1.5 is op die onderstaande diagram gebaseer.



1.1.4 Die konsentrasie ouksiene sal die hoogste wees by nommer ...

A 1.
B 2.
C 3.
D 4.

1.1.5 Die stingel in die diagram toon 'n respons bekend as ...

A negatiewe geotropisme.
B positiewe geotropisme.
C positiewe fototropisme.
D negatiewe fototropisme.

1.1.6 Die volgende tabel toon die konsentrasie (in g/100 cm^3 vloeistof) ureum, glukose en proteïen in bloedplasma van die nierslagaar en in urien.

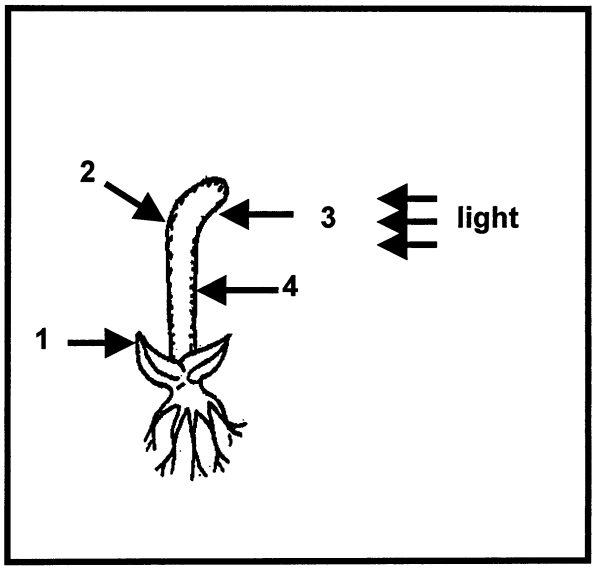
	Ureum	**Glukose**	**Proteïen**
Bloedplasma van nierslagaar	0,03	0,10	8,00
Urien	3,00	0,00	0,00

Die konsentrasie (in g/100 cm^3 vloeistof) van die drie komponente in die bloedplasma van die nieraar sal heel waarskynlik...wees.

	Ureum	**Glukose**	**Proteïen**
A	0,015	0,08	8,00
B	0,00	0,00	8,00
C	0,03	0,10	8,00
D	3,00	0,00	0,00

(6 x 2) **(12)**

QUESTIONS 1.1.4 and 1.1.5 are based on the diagram below.



1.1.4 The concentration of auxins will be highest at number...

A 1.
B 2.
C 3.
D 4.

1.1.5 The stem in the diagram shows a response known as....

A negative geotropism.
B positive geotropism.
C positive phototropism.
D negative phototropism.

1.1.6 The following table shows the concentration (in g/100 cm^3 fluid) of urea, glucose and protein in blood plasma of the renal artery and in urine.

	Urea	Glucose	Protein
Blood plasma of renal artery	0,03	0,10	8,00
Urine	3,00	0,00	0,00

The concentration (in g/100 cm^3 fluid) of the three components in the blood plasma of the renal vein would most likely be:

	Urea	Glucose	Protein
A	0,015	0,08	8,00
B	0,00	0,00	8,00
C	0,03	0,10	8,00
D	3,00	0,00	0,00

(6 x 2) **(12)**

1.2 Gee die korrekte **biologiese term** vir elk van die volgende beskrywings. Skryf slegs die **term** langs die toepaslike vraagnommer.

1.2.1 Die invloed van die eindknop, deur die produksie van ouksien, wat die groei van laterale knoppe inhibeer

1.2.2 Die verlies van water in vloeistofvorm vanaf die blare van plante

1.2.3 Organiese stowwe wat die groei en ontwikkeling in plante beheer

1.2.4 Die neiging van vloeistofmolekules om spontaan in dun buisies te styg

1.2.5 Die proses waardeur 'n beheermeganisme gereguleer word deur dieselfde gevolge wat dit voortbring

1.2.6 Diere van wie die liggaamstemperatuur varieer met dié van die uitwendige omgewing

1.2.7 'n Asemhalingsmeganisme in voëls, soortgelyk aan hyging in honde, wat verdamping verhoog om die liggaam af te koel

1.2.8 Groeibeweging in plante wat plaasvind in reaksie op 'n uitwendige gerigte stimulus

(8)

1.2 Give the correct **biological term** for each of the following descriptions. Write only the **term** next to the question number.

1.2.1 The influence of the terminal bud, by its production of auxin, which inhibits the growth of lateral buds

1.2.2 The loss of water in liquid form from the leaves of plants

1.2.3 Organic substances which control growth and development in plants

1.2.4 The tendency of liquid molecules to rise spontaneously in thin tubes

1.2.5 The process by which a control mechanism is regulated through the very effects it brings about

1.2.6 Animals in which the body temperature fluctuates with that of the external environment

1.2.7 A breathing mechanism in birds, similar to panting in dogs, which increases evaporation to cool the body down

1.2.8 Growth movement in plants that occurs in response to an external directional stimulus

(8)

1.3 Dui aan of elk van die stellings in KOLOM I op **slegs A, slegs B, beide A en B** of **geen** van die items in KOLOM II van toepassing is. Skryf slegs **A alleen, B alleen, A en B** of **geen** langs die toepaslike vraagnommer.

	KOLOM I	KOLOM II
1.3.1	Verantwoordelik vir selverlenging in jong stingels	A Gibberelliene B Ouksiene
1.3.2	Stel die plantsel in staat om turgessent te wees	A Selwand B Nukleus
1.3.3	Die beweging van molekules teen 'n konsentrasiegradiënt	A Diffusie B Aktiewe vervoer
1.3.4	Beïnvloed deur die oopgaan van stomata	A Worteldruk B Suigkrag van transpirasie
1.3.5	Die deel van die senuweestelsel wat onwillekeurige aktiwiteite van die liggaam beheer	A Simpatiese senuweestelsel B Parasimpatiese senuweestelsel
1.3.6	Versterking van die xileemvate	A Bande van Caspary B Lignien

(6 x 2) **(12)**

1.3 Indicate whether each of the statements in COLUMN I, applies to **A only, B only, both A and B** or **none** of the items in COLUMN II. Write **A only, B only, A and B** or **none** next to the relevant QUESTION number.

	COLUMN I	COLUMN II
1.3.1	Responsible for cell elongation in young stems	A Gibberellins B Auxins
1.3.2	Enables the plant cell to be turgid	A Cell wall B Nucleus
1.3.3	The movement of molecules against a concentration gradient	A Diffusion B Active transport
1.3.4	Influenced by the opening of stomata	A Root pressure B Transpiration pull
1.3.5	The part of the nervous system that controls the involuntary activities of the body	A Sympathetic nervous system B Parasympathetic nervous system
1.3.6	Strengthening of the xylem vessels	A Casparian strips B Lignin

(6 x 2) **(12)**

1.4 Die volgende eksperimente is opgestel om sekere fisiese prosesse te illustreer. Bestudeer die diagramme en beantwoord die vrae wat volg.

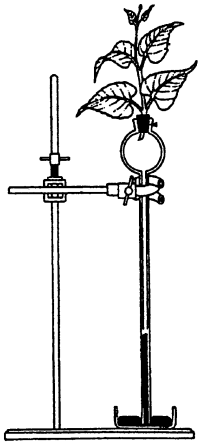


Diagram 1

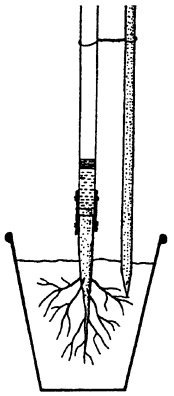


Diagram 2

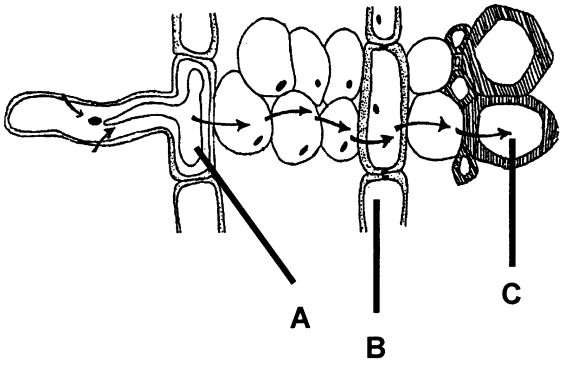


Diagram 3

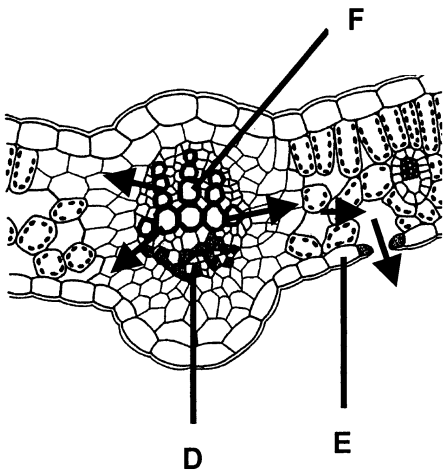


Diagram 4

1.4.1 Gee die doel van die opgestelde apparaat soos geïllustreer in:

(i) Diagram 1 (1)

(ii) Diagram 2 (1)

1.4.2 Verduidelik TWEE voorsorgmaatreëls wat geneem moet word wanneer die apparaat geïllustreer in Diagram 2, opgestel word. (4)

1.4 The following experiments were set up to illustrate certain physical processes. Study the diagrams and answer the questions that follow.

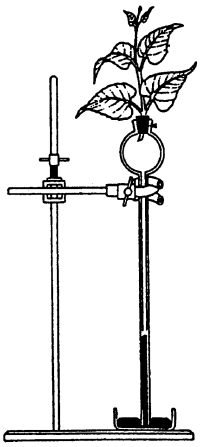


Diagram 1

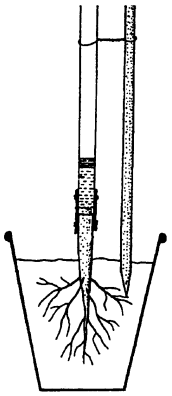


Diagram 2

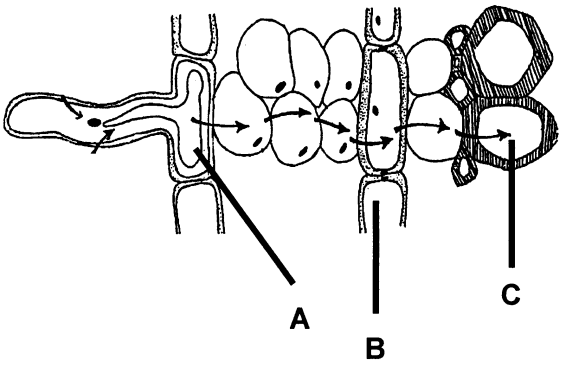


Diagram 3

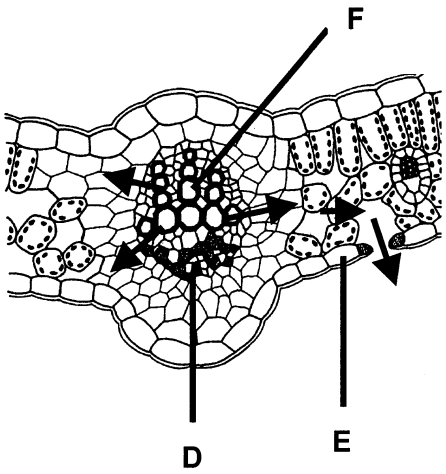


Diagram 4

1.4.1 What is the aim of the apparatus set up as illustrated in:

(i) Diagram 1 (1)

(ii) Diagram 2 (1)

1.4.2 Explain TWO precautions that should be taken when setting up the apparatus illustrated in Diagram 2. (4)

1.4.3 Diagramme 3 en 4 toon die beweging van water wat die fisiese prosesse geïllustreer in Diagramme 1 en 2, veroorsaak.
Watter diagram (3 of 4) toon waterbeweging wat kan lei tot die fisiese proses verteenwoordig in:

(i) Diagram 1 (1)

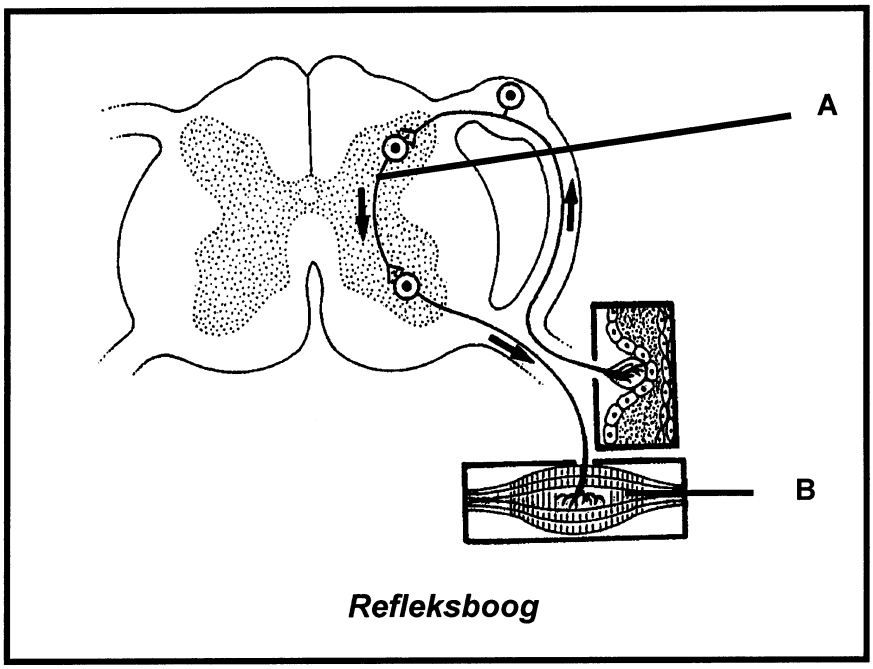
(ii) Diagram 2 (1)

1.4.4 Watter **letter** dui die deel aan wat water vervoer in:

(i) Diagram 3 (1)

(ii) Diagram 4 (1)
(10)

1.5 Bestudeer die volgende diagram en beantwoord die vrae wat volg.



Refleksboog

1.5.1 Definieer 'n refleksaksie. (2)

1.5.2 Identifiseer deel B en noem sy funksie. (2)

1.5.3 Verduidelik die effek op die liggaam as A beskadig is. (3)
(7)

1.4.3 Diagrams 3 and 4 show the movement of water that causes the physical processes illustrated in Diagrams 1 and 2.
Which diagram (3 or 4) shows water movement that could lead to the physical process represented in:

(i) Diagram 1 (1)

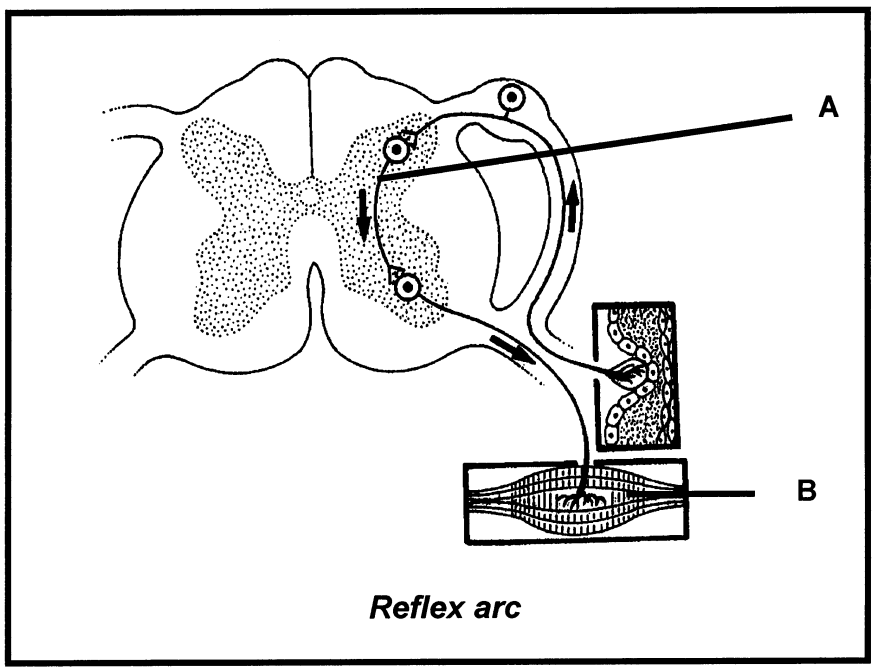
(ii) Diagram 2 (1)

1.4.4 Which **letter** indicates the part that transports water in:

(i) Diagram 3 (1)

(ii) Diagram 4 (1)
(10)

1.5 Study the following diagram and answer the questions that follow.



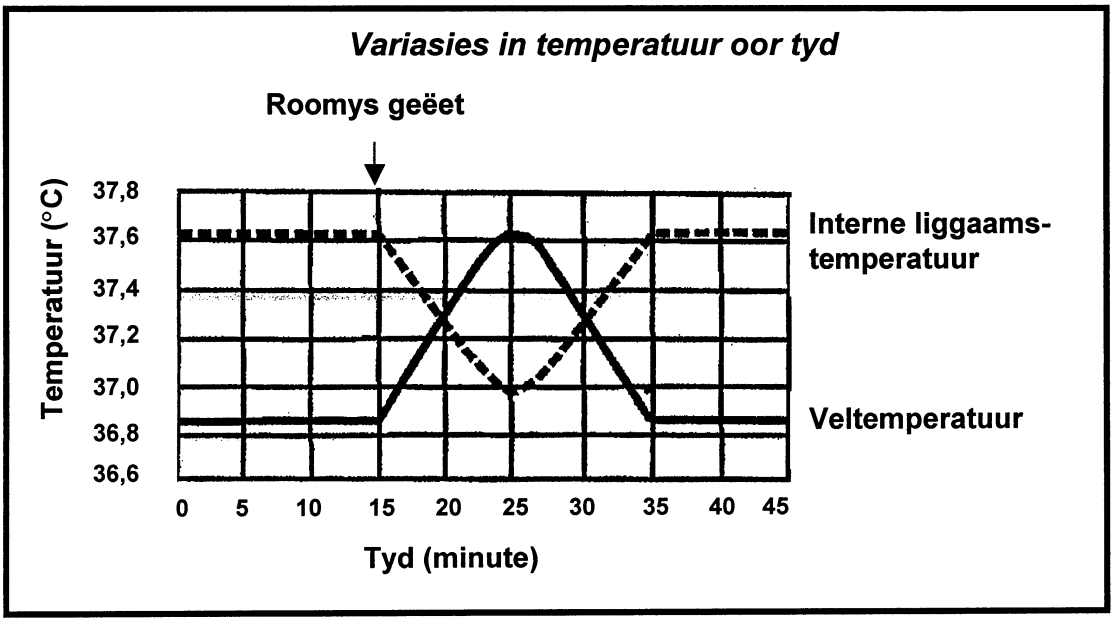
Reflex arc

1.5.1 Define a reflex action. (2)

1.5.2 Identify part B and state its function. (2)

1.5.3 Explain the effect on the body if A is damaged. (3)
(7)

1.6 Die onderstaande grafiek toon die resultate van 'n ondersoek na die interne liggaamstemperatuur en veltemperatuur van 'n kind. Die kind het in 'n temperatuurbeheerde kamer by 45°C gerus en roomys geëet op die tyd soos aangedui.



1.6.1 Wat was die kind se benaderde interne liggaamstemperatuur gedurende die eerste 15 minute van die eksperiment? (2)

1.6.2 Beskryf wat gebeur het met die interne liggaamstemperatuur tussen die 15de en 35ste minuut van die eksperiment. (2)

1.6.3 Verduidelik waarom daar 'n verandering is in die liggaamstemperatuur in die 10 minute wat volg net na die eet van die roomys. (2)

1.6.4 Voorspel wat met elk van die volgende sal gebeur sou die kind in yskoue water spring:

(i) Liggaamstemperatuur (1)

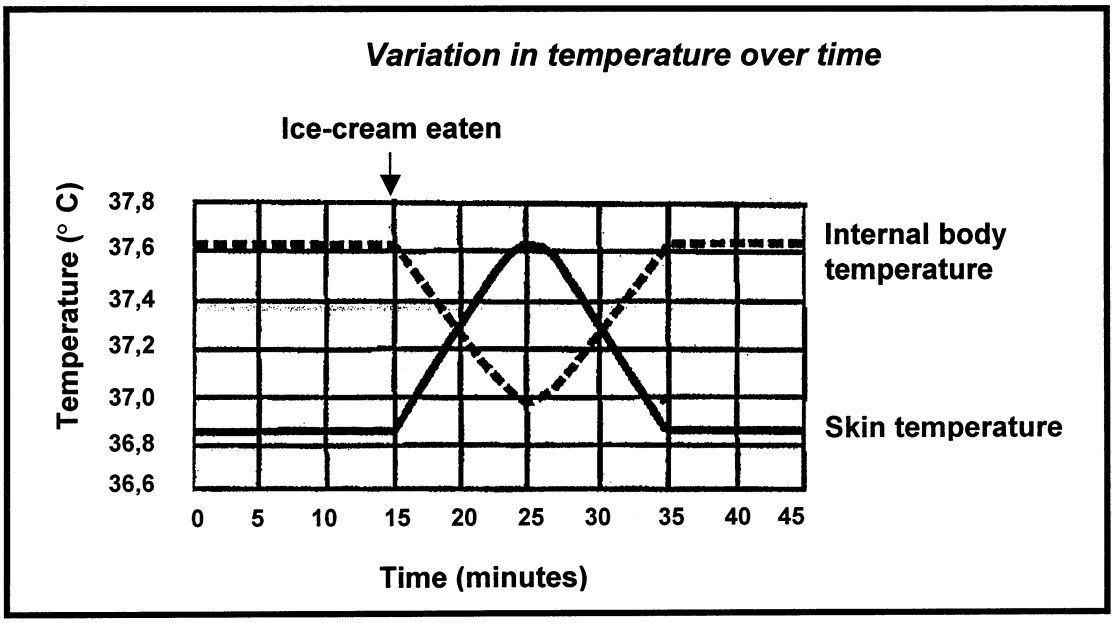
(ii) Veltemperatuur (1)

1.6.5 Verduidelik jou antwoord in VRAAG 1.6.4(ii). (3)
(11)

Totaal Vraag 1: 60

TOTAAL AFDELING A: 60

1.6 The graph below shows the results of an investigation into the internal body temperature and skin temperature of a child. The child rested in a temperature controlled chamber at 45°C and ate ice-cream at the time shown.



1.6.1 What was the child's approximate internal body temperature during the first 15 minutes of the experiment? (2)

1.6.2 Describe what happened to the internal body temperature between the 15th and 35th minute of the experiment: (2)

1.6.3 Explain why there is a change in the body temperature in the ten minutes following the eating of ice-cream. (2)

1.6.4 Predict what will happen to each of the following should the child jump into ice cold water:

(i) Body temperature (1)

(ii) Skin temperature (1)

1.6.5 Explain your answer in QUESTION 1.6.4(ii). (3)
(11)

Total Question 1: 60

TOTAL SECTION A: 60

AFDELING B

VRAAG 2

2.1 Bestudeer die onderstaande diagramme en beantwoord die vrae wat volg.

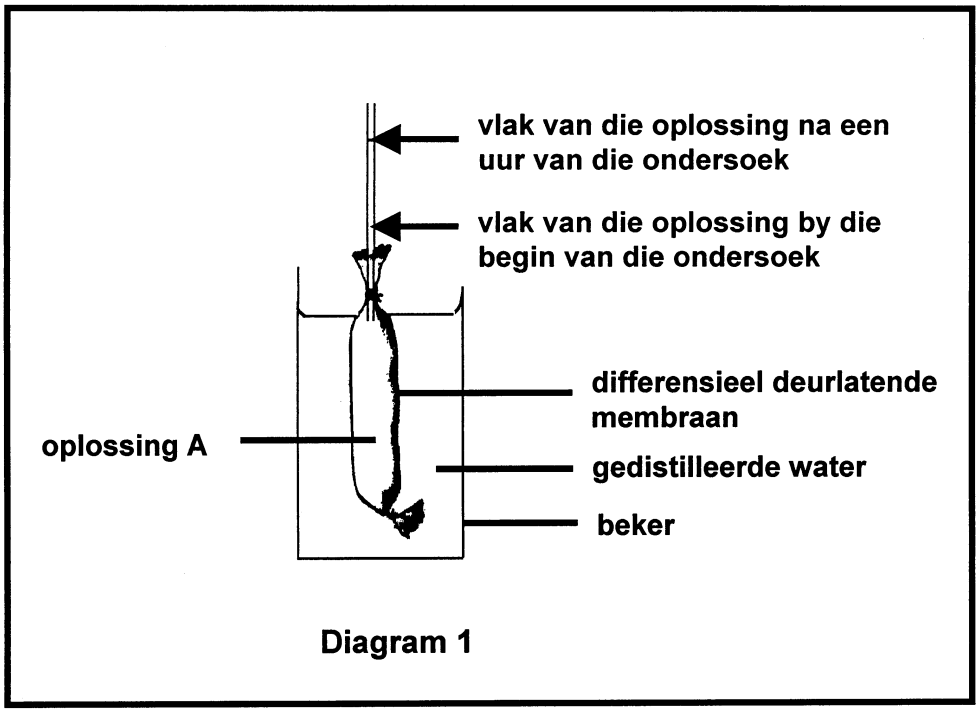


Diagram 1

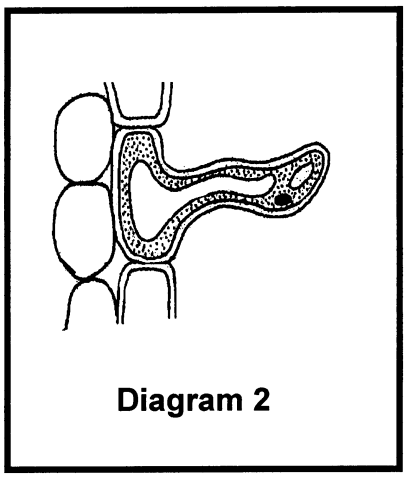


Diagram 2

2.1.1 Watter fisiese proses met betrekking tot water word deur Diagram 1 geïllustreer? (1)

2.1.2 Noem die dele in Diagram 2 wat vergelyk met elk van die volgende dele in Diagram 1:

(i) Oplossing A (1)

(ii) Die differensieel deurlatende membraan (1)

SECTION B

QUESTION 2

2.1 Study the diagrams below and answer the questions that follow.

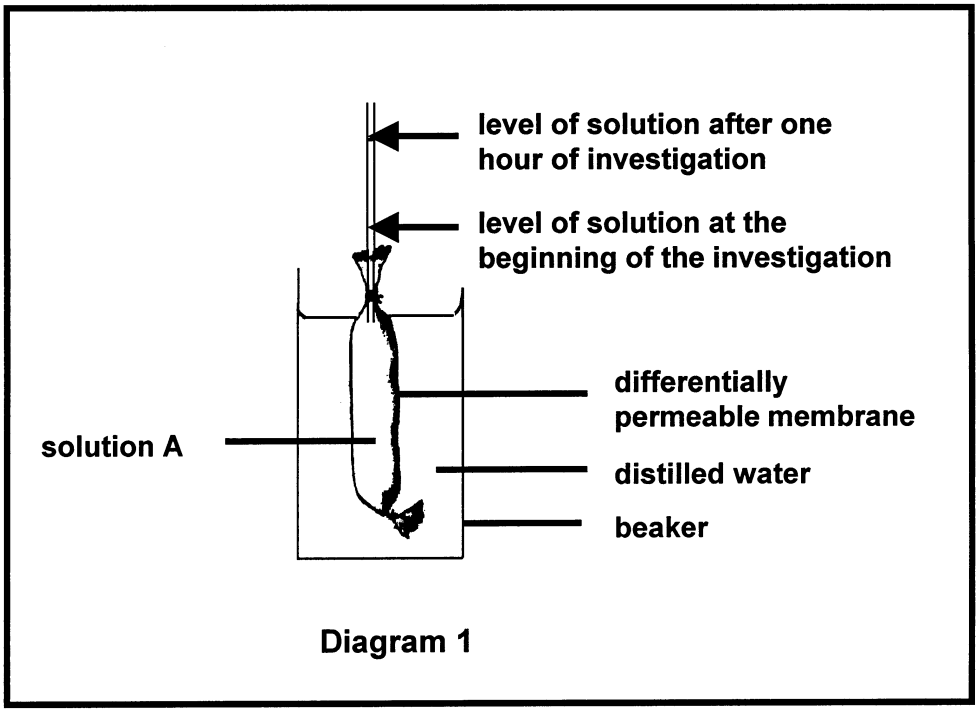


Diagram 1

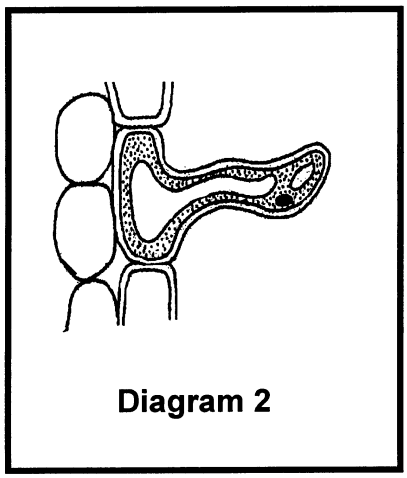


Diagram 2

2.1.1 Which physical process involving water is illustrated by Diagram 1? (1)

2.1.2 Name the parts in Diagram 2 that compare with each of the following parts in Diagram 1:

(i) Solution A (1)

(ii) The differentially permeable membrane (1)

2.1.3 In 'n ander eksperiment is twee identiese silinders aartappelweefsel gebruik. Elke silinder aartappelweefsel is in elk van twee bekers wat oplossing A en gedistilleerde water onderskeidelik bevat, geplaas.

(i) Hoe sal die gewig van die aartappel in oplossing A verskil van die een in gedistilleerde water na een uur? (2)

(ii) Verduidelik jou antwoord in VRAAG 2.1.3 (i). (3)

2.1.4 Aanvaar dat oplossing A hipertonies is tot die inhoud van die selle in Diagram 2. Teken 'n benoemde diagram om die voorkoms van die sel in Diagram 2, wat verantwoordelik is vir die absorpsie van water, aan te dui nadat dit vir 'n paar uur in oplossing A geplaas was. (8)
(16)

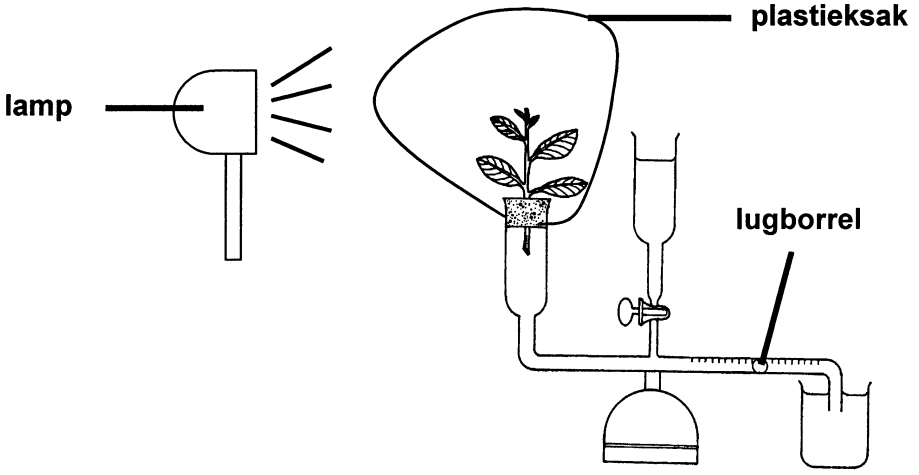
2.1.3 In another experiment two identical cylinders of potato tissue were used. Each cylinder of potato tissue was placed in each of two beakers containing solution A and distilled water respectively.

(i) How will the mass of the potato in solution A differ from that in distilled water after one hour? (2)

(ii) Explain your answer in QUESTION 2.1.3 (i). (3)

2.1.4 Assume that solution A is hypertonic to the contents of the cells in Diagram 2. Draw a labelled diagram to show the appearance of the cell in Diagram 2 that is involved in the absorption of water, after it has been placed in solution A for a few hours. (8)
(16)

2.2 Die onderstaande apparaat is gebruik om die tempo van transpirasie te ondersoek.



Apparaat gebruik om die tempo van transpirasie te ondersoek

In die ondersoek oor transpirasie, is afmetings van die afstand afgelê deur die lugborrel in die kapillêre buis elke minuut geneem. Die opening van die kapillêre buis het 'n oppervlakte van 4 mm^2. Bestudeer die onderstaande tabel van die resultate verkry, en beantwoord die vrae wat volg.

Tyd (minute)	Afstand afgelê deur die lugborrel in die kapillêre buis (mm)
1	4
2	11
3	18
4	30
5	22

2.2.1 Noem die apparaat wat in hierdie ondersoek gebruik is. (1)

2.2.2 Gebruik die vergelyking, **Volume water verplaas = afstand in die kapillêre buis x oppervlakte van die kapillêre buisopening**, om die volume water verplaas teen die tweede minuut te bereken. (3)

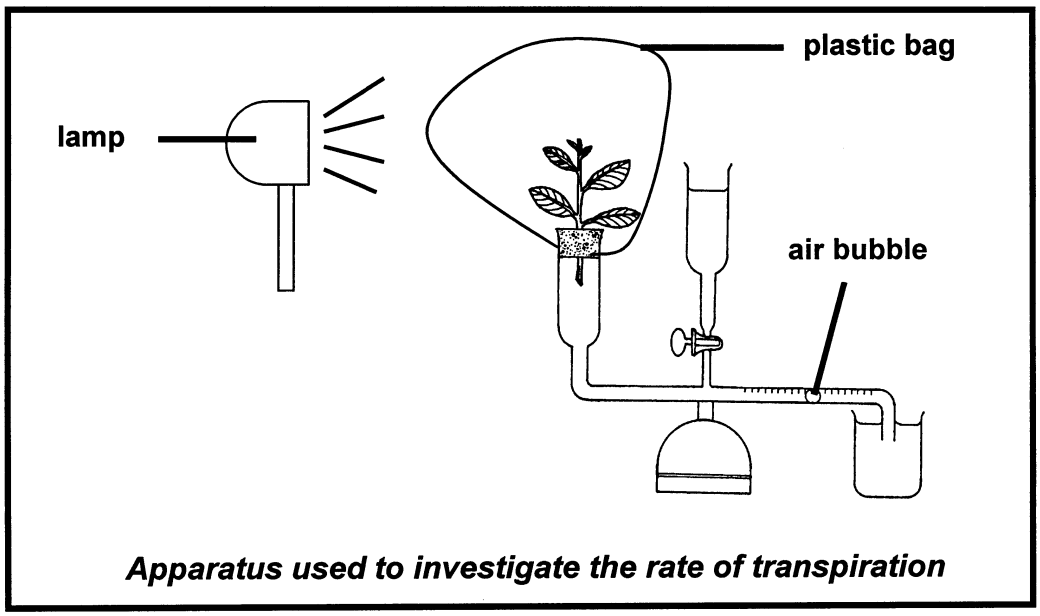
2.2.3 Teken 'n kolomgrafiek om die inligting in die tabel voor te stel. (11)

2.2.4 Gedurende watter minuut het die transpirasietempo afgeneem? (1)

2.2.5 Verduidelik waarom die tempo van transpirasie waarna in VRAAG 2.2.4 verwys word, afgeneem het. (3)
(19)

Totaal Vraag 2: 35

2.2 The apparatus below was used to investigate the rate of transpiration.



Apparatus used to investigate the rate of transpiration

In the investigation on transpiration, measurements of the distance travelled by the air bubble in the capillary tube were taken every minute. The opening of the capillary tube had an area of 4 mm^2. Study the table below of the results obtained, and answer the questions that follow.

Time (minutes)	Distance travelled by air bubble along capillary tube (mm)
1	4
2	11
3	18
4	30
5	22

2.2.1 Name the apparatus used in this investigation. (1)

2.2.2 Use the equation, **Volume of water displaced = distance along capillary tube x area of capillary tube opening**, to calculate the volume of water displaced at the second minute. (3)

2.2.3 Draw a bar graph to present the data shown in the table. (11)

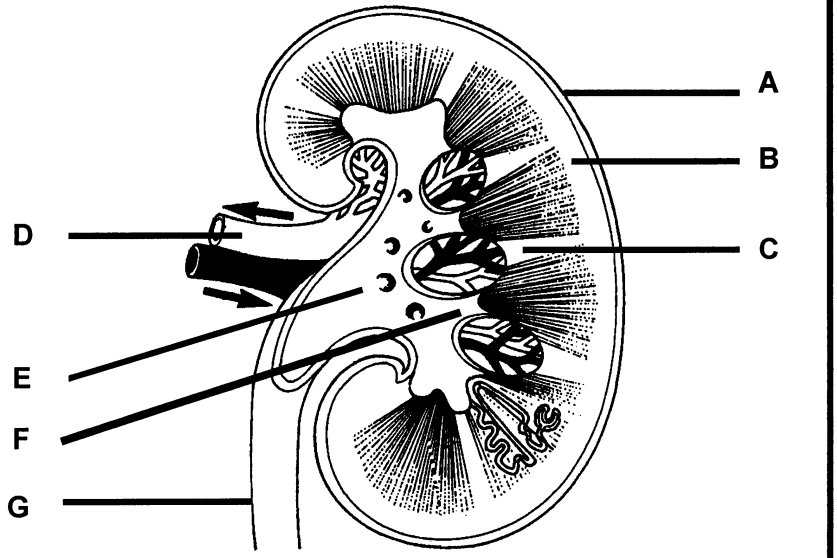
2.2.4 During which minute did the transpiration rate decrease? (1)

2.2.5 Explain why the transpiration rate referred to in QUESTION 2.2.4 decreased. (3)
(19)

Total Question 2: 35

VRAAG 3

3.1 Bestudeer die onderstaande diagram van 'n lengtesnee deur 'n nier en beantwoord die vrae wat volg.



Lengtesnee van die menslike nier

3.1.1 Identifiseer dele D, E en F. (3)

3.1.2 Waarom is streek B donkerder in kleur in vergelyking met streek C in 'n werklike voorbeeld? (2)

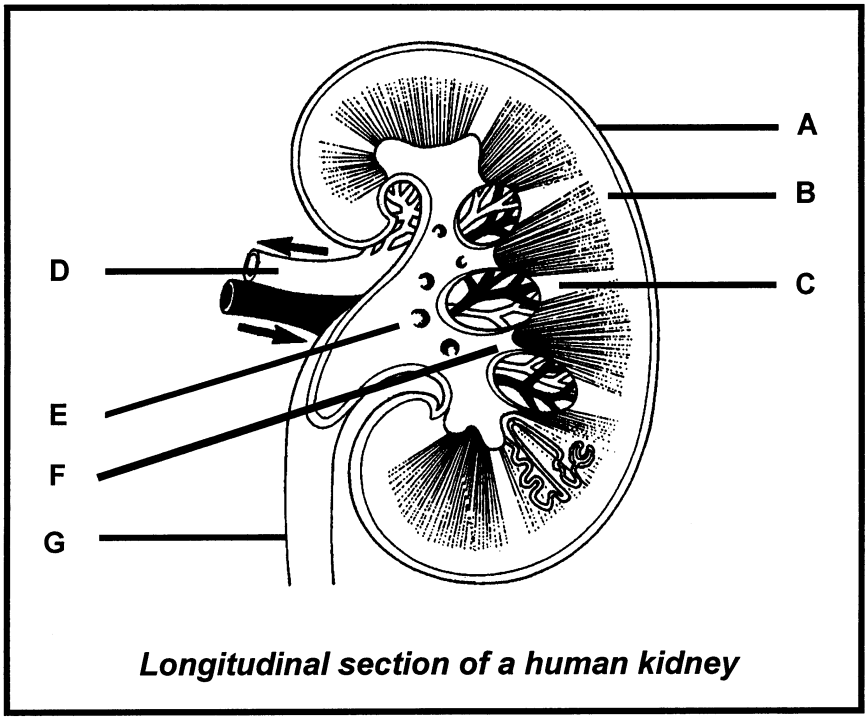
3.1.3 Identifiseer deel A en noem EEN funksie daarvan. (2)

3.1.4 Noem die rol van die vetweefsel wat die nier omring. (1)

3.1.5 Verduidelik hoe die funksionering van die nier geraak sal word indien deel G geblokkeer word deur 'n groot niersteen. (5)
(13)

QUESTION 3

3.1 Study the diagram below of a longitudinal section through a kidney and answer the questions that follow.



Longitudinal section of a human kidney

3.1.1 Identify parts D, E and F. (3)

3.1.2 Why is region B darker in colour compared to region C in an actual specimen? (2)

3.1.3 Identify part A and state ONE function of it. (2)

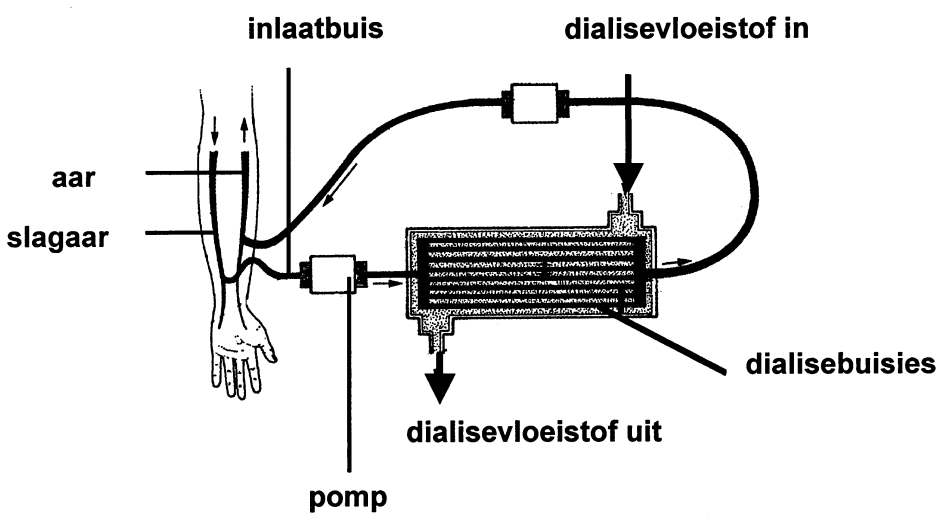
3.1.4 State the role of the fatty tissue surrounding the kidney. (1)

3.1.5 Explain how the functioning of the kidney will be affected if part G is blocked by a large kidney stone. (5)
(13)

3.2 Bestudeer die onderstaande paragraaf en diagram en beantwoord die vrae wat volg.

*Niere kan so beskadig word dat hulle nie langer behoorlik funksioneer nie en dan sê ons dat die persoon het nierversaking. Mense met erge nierversaking kan met **dialise** behandel word deur 'n niermasjien te gebruik om die bloed te suiwer. Dialise is die skeiding van molekules deur grootte, die kleiner molekules diffundeer deur 'n selektiefdeurlatende membraan. Bloed word vanaf die slagaar geneem, gewoonlik in die arm, en dan deur 'n niermasjien en terug na die aar van die arm gepomp. In die masjien, sirkuleer bloed deur fyn buisies gemaak van selektiefdeurlatende membrane. Die samestelling van dialisevloeistof moet soortgelyk wees aan die samestelling van bloed wat die nier verlaat. Die proses neem tussen drie en ses ure en moet twee tot drie keer 'n week gedoen word.*

(Verwerk uit: 'Focus on Biology Grade 12': L. Buckley et al)



Niermasjien

3.2.1 In watter deel van die nefron vind 'n soortgelyke proses plaas as wat deur die niermasjien geïllustreer word? (1)

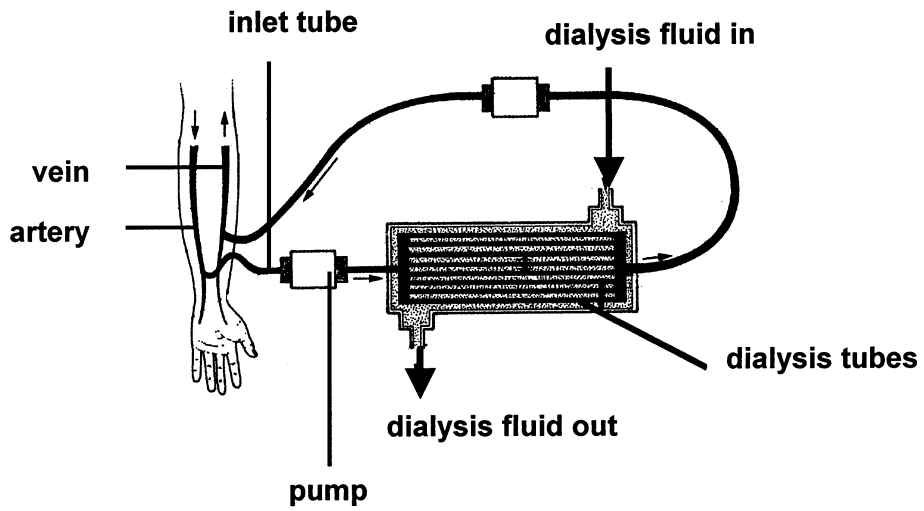
3.2.2 Watter dele van die nier en geassosieerde bloedvate kan met die onderstaande dele van die niermasjien vergelyk word? Verduidelik jou antwoord in elke geval deur na nierfunksionering te verwys.

(i) Inlaatbuis wat die bloed bevat (2)
(ii) Pomp (3)
(iii) Dialisebuise (2)

3.2 Study the passage and diagram below and answer the questions that follow.

*Kidneys can become so damaged that they no longer function properly and we say that the person is in renal failure. People with severe renal failure can be treated by **dialysis,** using a kidney machine to purify the blood. Dialysis is the separation of molecules by size, the smaller molecules diffusing through a selectively permeable membrane. Blood is taken from an artery, usually in the arm, pumped through a kidney machine and back into the vein of the arm. In the machine, blood circulates through fine tubes made of selectively permeable membranes. The composition of dialysis fluid needs to be similar to the composition of blood leaving the kidney. The process takes between three and six hours and needs to be done two or three times a week.*

(Modified from: Focus on Biology Grade 12: L Buckley et al)



Kidney machine

3.2.1 In which part of the nephron does a similar process take place as illustrated by the kidney machine? (1)

3.2.2 Which parts of the kidney and associated blood vessels can be compared with the parts of the kidney machine listed below? Explain your answer in each case by referring to kidney functioning.

(i) Inlet tube containing the blood (2)
(ii) Pump (3)
(iii) Dialysis tubes (2)

3.2.3 Noem EEN organiese en EEN anorganiese stof wat in die dialise-vloeistof wat in die masjien ingaan, teenwoordig moet wees. (2)

3.2.4 Verduidelik die rol van die samestelling van die dialisevloeistof in die funksionering van die niermasjien. (5)

3.2.5 Teen watter temperatuur moet die dialisevloeistof gehou word? (1)

3.2.6 Vir hoeveel ure per week moet 'n persoon wat aan nierversaking ly, aan 'n niermasjien gekoppel wees? (2)

3.2.7 Verduidelik hoekom dit noodsaaklik is om 'n persoon aan die niermasjien te koppel vir die aantal ure in VRAAG 3.2.6 genoem. (4)
(22)

Totaal Vraag 3: 35

3.2.3 Name ONE organic and ONE inorganic substance which should be present in the dialysis fluid coming into the machine. (2)

3.2.4 Explain the role of the composition of the dialysis fluid in the functioning of the kidney machine. (5)

3.2.5 At what temperature should the dialysis fluid be kept? (1)

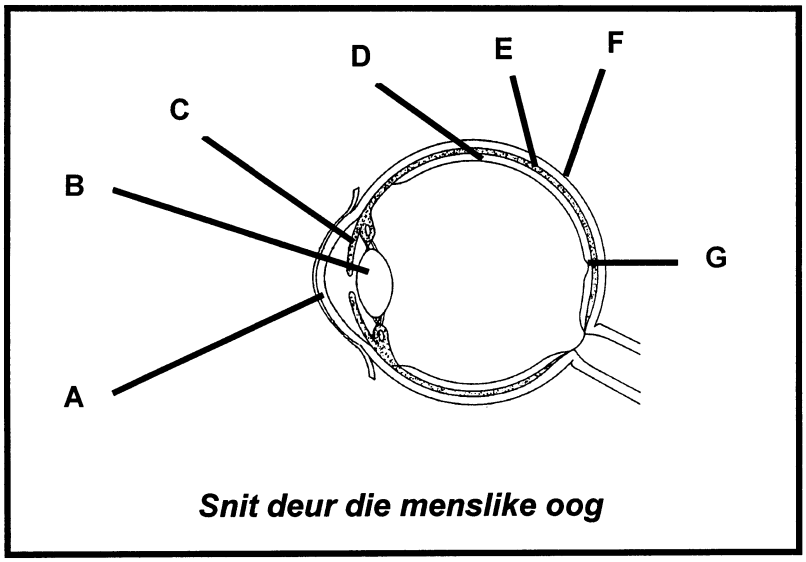
3.2.6 For how many hours per week should a person who is suffering from renal failure, be connected to a kidney machine? (2)

3.2.7 Explain why it is necessary to connect the patient on the kidney machine for as many hours as mentioned in QUESTION 3.2.6. (4)
(22)

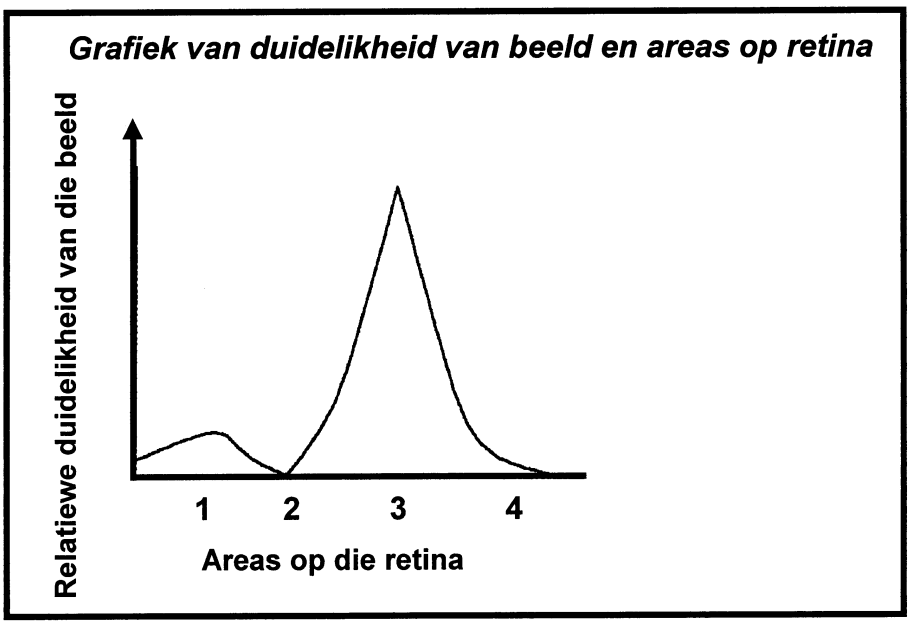
Total Question 3: 35

VRAAG 4

4.1 Bestudeer die volgende diagram en grafiek en beantwoord die vrae wat volg.



Snit deur die menslike oog



4.1.1 Noem TWEE kenmerke eie aan dele A en B en noem ook die betekenis van elke kenmerk. (4)

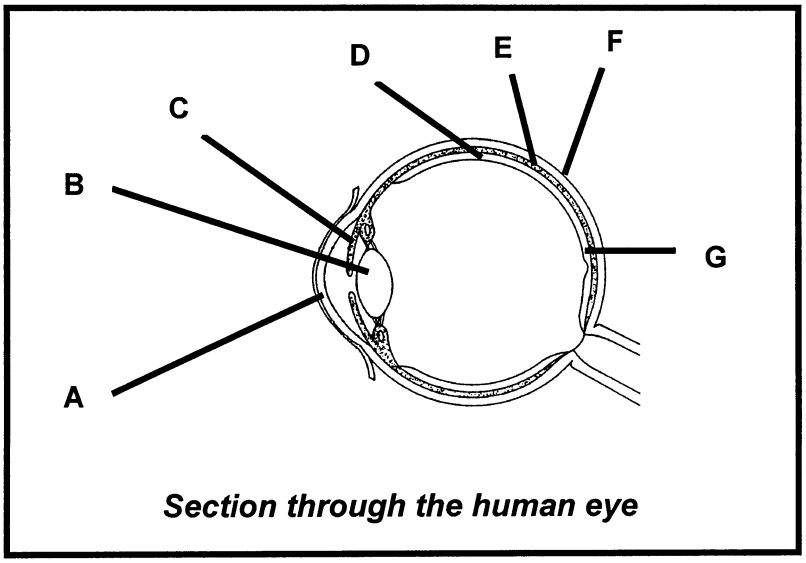
4.1.2 Verduidelik TWEE maniere waarop deel E aangepas is vir sy funksie. (4)

4.1.3 Skryf die **letter** en **naam** van die deel wat aanpassings sal maak wanneer 'n persoon van 'n helder verligte kamer na 'n donker kamer beweeg. (2)

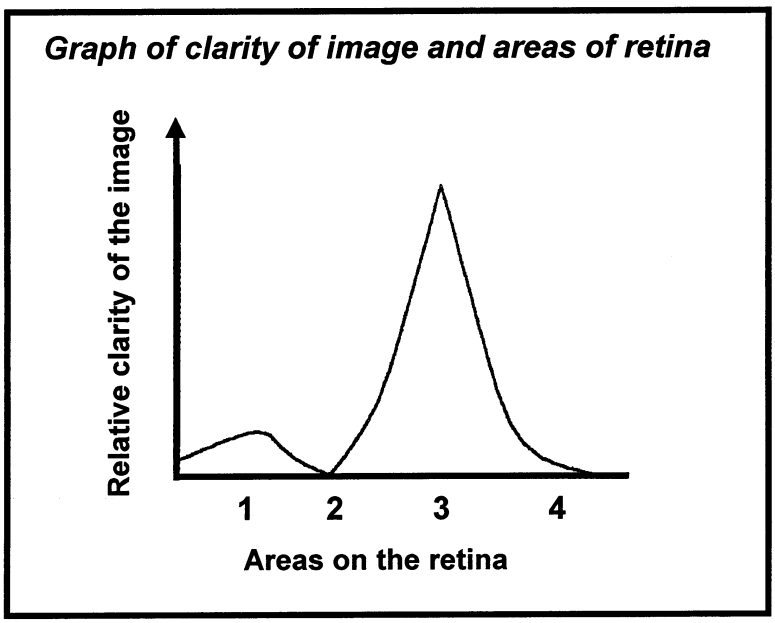
4.1.4 Beskryf die werking van die deel in VRAAG 4.1.3 genoem. (3)

QUESTION 4

4.1 Study the following diagram and graph and answer the questions that follow.



Section through the human eye



4.1.1 State TWO properties common to parts A and B and state the significance of each property. (4)

4.1.2 Explain TWO ways in which part E is suited for its function. (4)

4.1.3 Write the **letter** and **name** of the part that will make adjustments when a person moves from a brightly lit room into a dark room. (2)

4.1.4 Describe the action of the part mentioned in QUESTION 4.1.3. (3)

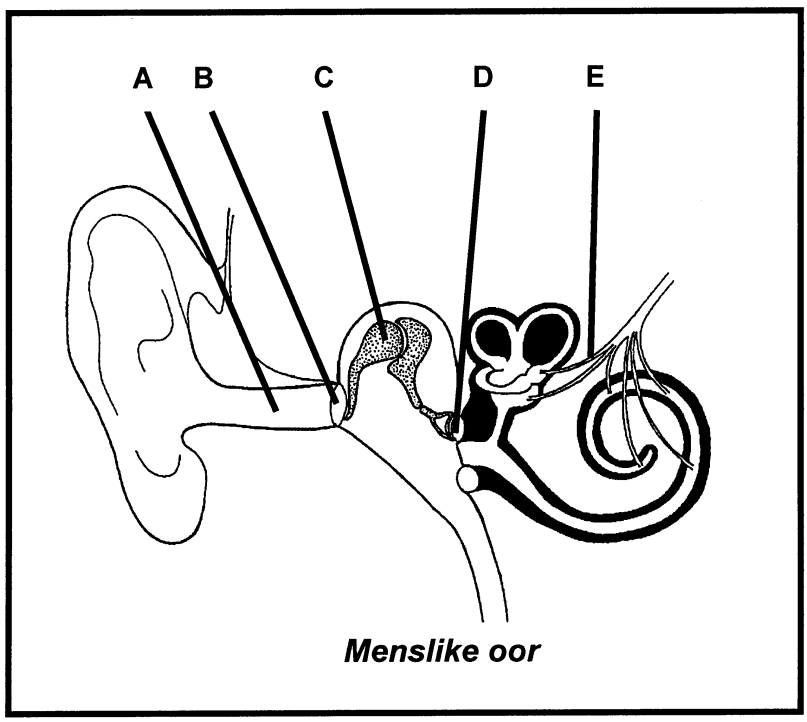
4.1.5 Noem enige TWEE strukture, nie op die diagram aangedui nie, wat help met die beskerming van die oog. (2)

4.1.6 Watter **nommer** op die grafiek verteenwoordig G op die diagram? Verduidelik jou antwoord. (3)

4.1.7 Watter area van deel D op die diagram word deur nommer 2 op die grafiek voorgestel? Verduidelik jou antwoord. (3)

4.1.8 Hoe sal die duidelikheid van die beeld by nommer 3 op die grafiek beïnvloed word as die voorwerp verder van die oog af beweeg word, met die veronderstelling dat die oog normaal funksioneer? Verduidelik jou antwoord. (3)
(24)

4.2 Bestudeer die volgende diagram van die menslike oor en beantwoord die vrae wat volg.



Menslike oor

4.2.1 Deel A skei 'n wasagtige stof af wat bekend staan as serumen. Soms vorm die was 'n soliede prop teen deel B.

(i) Noem TWEE funksies van serumen. (2)

(ii) Verduidelik die invloed op gehoor indien 'n wasprop teen deel B gevorm is. (3)

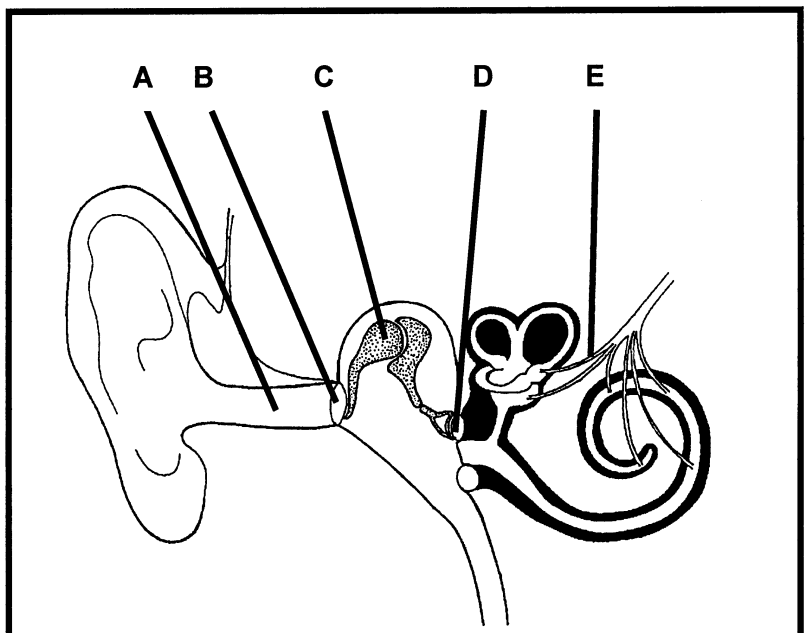
4.1.5 Name any TWO structures, not shown on the diagram, which help in the protection of the eye. (2)

4.1.6 Which **number** on the graph represents G on the diagram? Explain your answer. (3)

4.1.7 Which area of part D on the diagram is shown at number 2 on the graph? Explain your answer. (3)

4.1.8 How will the clarity of the image at number 3 on the graph be influenced if the object is moved further away from the eye, assuming that the eye is functioning normally? Explain your answer. (3)
(24)

4.2 Study the following diagram of the human ear and answer the questions that follow.



Human ear

4.2.1 Part A secretes a wax known as cerumen. Sometimes the wax forms a solid plug against part B.

(i) State TWO functions of cerumen. (2)

(ii) Explain the effect on hearing if a waxy plug is formed against part B. (3)

4.2.2 (i) Sal klankgolwe deel D bereik indien deel C verwyder is? (1)

(ii) Gee 'n rede vir jou antwoord. (2)

4.2.3 Noem die deel van die brein waarna senuwee E senuwee-impulse sal gelei en gee 'n rede vir jou antwoord. (3)
(11)

Totaal Vraag 4: 35

TOTAAL AFDELING B: 105

AFDELING C

VRAAG 5

5.1 Bestudeer die volgende diagram en beantwoord die vrae wat volg.

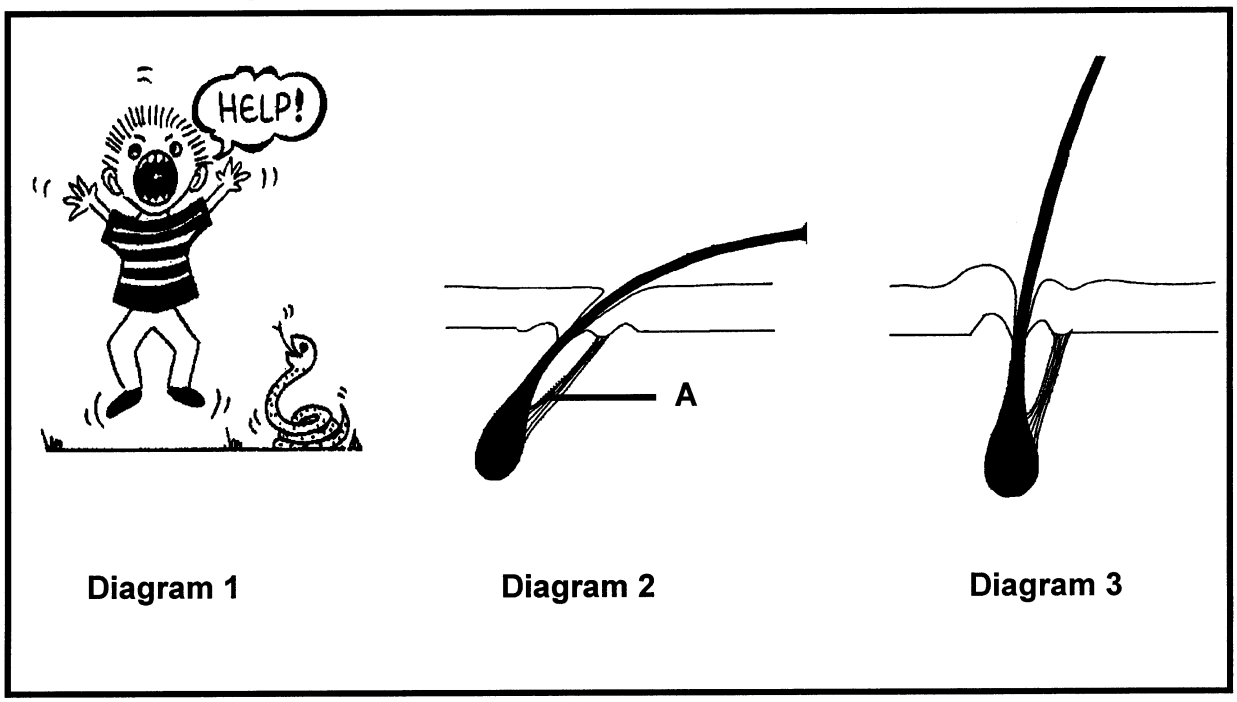


Diagram 1 **Diagram 2** **Diagram 3**

5.1.1 Watter diagram (2 of 3) is verteenwoordigend van die vel van die persoon in diagram 1? (1)

5.1.2 Gee 'n rede vir jou antwoord in VRAAG 5.1.1. (2)

5.1.3 Identifiseer deel A en noem die funksie daarvan. (2)

5.1.4 Teken lyndiagramme van dwarssneë deur 'n bloedhaarvaatjie in die vel in Diagramme 2 en 3, om die verskil in die breedte van die bloedhaarvaatjies te toon. (2)

4.2.2 (i) Will sound waves reach part D if part C was removed? (1)

(ii) Give a reason for your answer. (2)

4.2.3 Name the part of the brain to which nerve E will conduct nerve impulses and give a reason for your answer. (3)
(11)

Total Question 4: 35

TOTAL SECTION B: 105

SECTION C

QUESTION 5

5.1 Study the following diagram and answer the questions that follow.

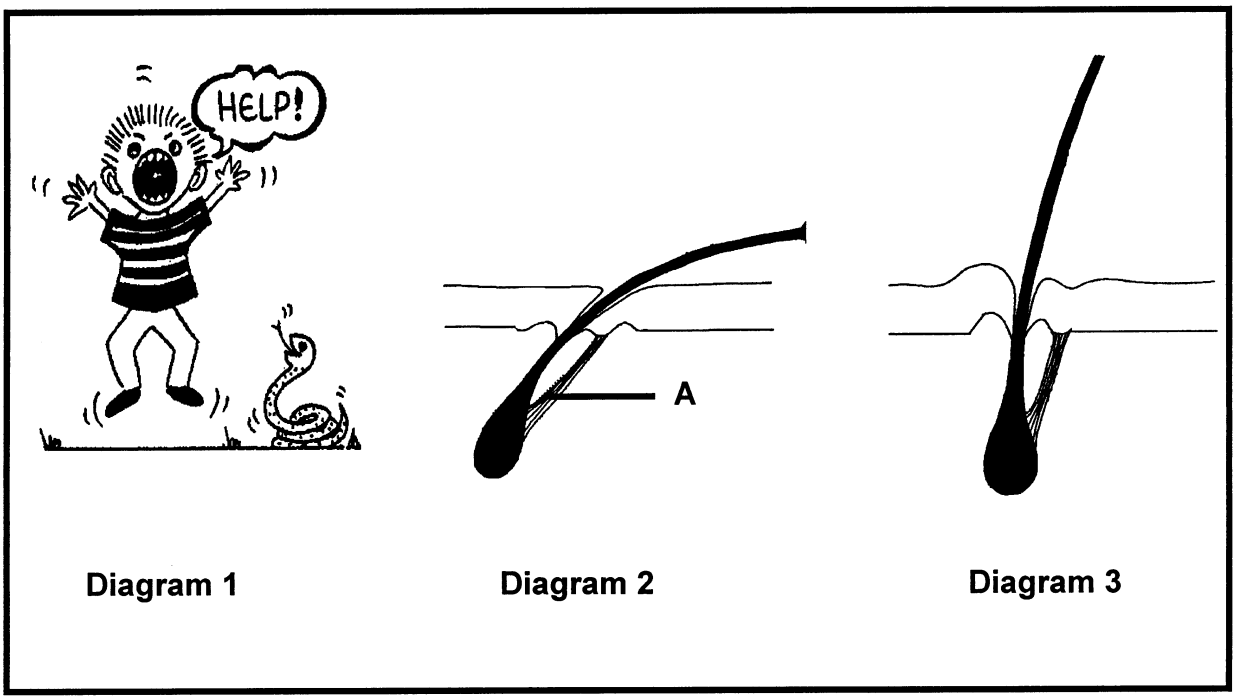


Diagram 1 **Diagram 2** **Diagram 3**

5.1.1 Which diagram (2 or 3), is representative of the skin of the person in Diagram 1? (1)

5.1.2 State a reason for your answer in QUESTION 5.1.1. (2)

5.1.3 Identify part A and state its function. (2)

5.1.4 Draw line diagrams of cross sections of a blood capillary in the skin in Diagrams 2 and 3, to show the difference in the diameter of the blood capillaries. (2)

5.1.5 Diagram 2 toon die vel van persoon X en Diagram 3 toon die vel van persoon Y. Veronderstel al die ander faktore bly konstant, verduidelik watter persoon (X of Y), sal heel waarskynlik meer verdunde urien produseer. (5)

5.1.6 Noem 'n hormoon, behalwe adrenalien, wat 'n hoër as normale konsentrasie in die skeletspiere van die persoon in Diagram 1, sal hê. (1)

5.1.7 Verduidelik waarom die hormoon in VRAAG 5.1.6 genoem, in 'n hoër as normale konsentrasie in die skeletspiere van die persoon in Diagram 1 benodig sal word. (4)
(17)

5.2 Verduidelik die rol van adrenalien in die voorbereiding van die persoon in Diagram 1 om te reageer op die situasie waarin hy homself bevind.

Feitelike inhoud: (15)
Sintese: (3)
(18)

Totaal Vraag 5: 35

TOTAAL AFDELING C: 35

GROOTTOTAAL: 200

5.1.5 Diagram 2 shows the skin of person X and Diagram 3 shows the skin of person Y. Assuming all other factors are constant, explain which person (X or Y), will most probably produce more dilute urine. (5)

5.1.6 Name a hormone other than adrenalin, which will have a higher than normal concentration in the skeletal muscles of the person in Diagram 1. (1)

5.1.7 Explain why the hormone named in QUESTION 5.1.6 will be needed in a higher than normal concentration in the skeletal muscles of the person in Diagram 1. (4)
(17)

5.2 Describe the role of adrenalin in preparing the person in Diagram 1 to respond to the situation he finds himself in.

Factual content: (15)
Synthesis: (3)
(18)

Total Question 5: 35

TOTAL SECTION C: 35

GRAND TOTAL: 200