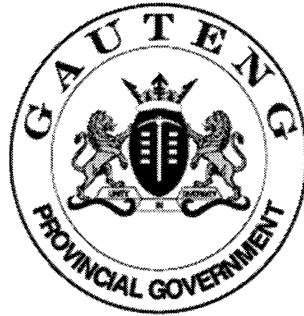


**SENIOR CERTIFICATE EXAMINATION
SENIORSERTIFIKAAT-EKSAMEN**



**OCTOBER / NOVEMBER
OKTOBER / NOVEMBER**

2004

BIOLOGY

BIOLOGIE
(Second Paper)
(Tweede Vraestel)

LG

306-3/2 LS

BIOLOGY LG: Paper 2

11 pages
11 bladsye



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GAUTENGSE DEPARTEMENT VAN ONDERWYS
SENIORSERTIFIKAAT-EKSAMEN

BIOLOGIE LG
(Tweede Vraestel)

TYD: 2 uur

PUNTE: 150

INSTRUKSIES EN INLIGTING AAN KANDIDATE:

- Beantwoord AL die vrae in jou antwoordboek.
 - Begin elke vraag se antwoord bo-aan 'n nuwe bladsy.
 - Nommer die antwoorde presies soos die vrae genummer is.
 - Skryf netjies en leesbaar.
 - Indien antwoorde nie volgens die instruksies van elke vraag aangebied word nie, sal punte afgetrek word.
 - Die diagramme in die vraestel is nie noodwendig volgens skaal geteken nie.
 - Nie-programmeerbare sakrekenaars mag gebruik word.
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-

AFDELING A

VRAAG 1

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

1.1.1 Watter EEN van die volgende is **nie** betrokke by homeostase in die soogdierliggaam nie?

- A. Galblaas
- B. Lewer
- C. Pankreas
- D. Vel

1.1.2 Watter EEN van die volgende is waar oor ouksiene? Die _____.

- A. konsentrasie sal die grootste wees aan die kant wat lig ontvang
- B. konsentrasie sal die grootste wees aan die skadukant
- C. konsentrasie sal laer wees aan die skadukant
- D. kant wat lig ontvang, sal vinniger groei

**GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION**

**BIOLOGY LG
(Second Paper)**

TIME: 2 hours

MARKS: 150

INSTRUCTIONS AND INFORMATION TO CANDIDATES:

- Answer ALL the questions in your answer book.
 - Start the answer to each question at the top of a new page.
 - Number the answers exactly as the questions are numbered.
 - Write neatly and legibly.
 - If answers are not presented according to the instructions of each question, marks will be deducted.
 - The diagrams in the question paper may not necessarily be drawn to scale.
 - Non-programmable calculators may be used.
-
-

SECTION A

QUESTION 1

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

1.1.1 Which ONE of the following is **not** concerned with homeostasis in the mammalian body?

- A. Gall bladder
- B. Liver
- C. Pancreas
- D. Skin

1.1.2 Which ONE of the following is true about auxins? The _____.

- A. concentration will be greatest on the side receiving light
- B. concentration will be the greatest on the shaded side
- C. concentration will be lower on the shaded side
- D. side receiving light will be growing faster

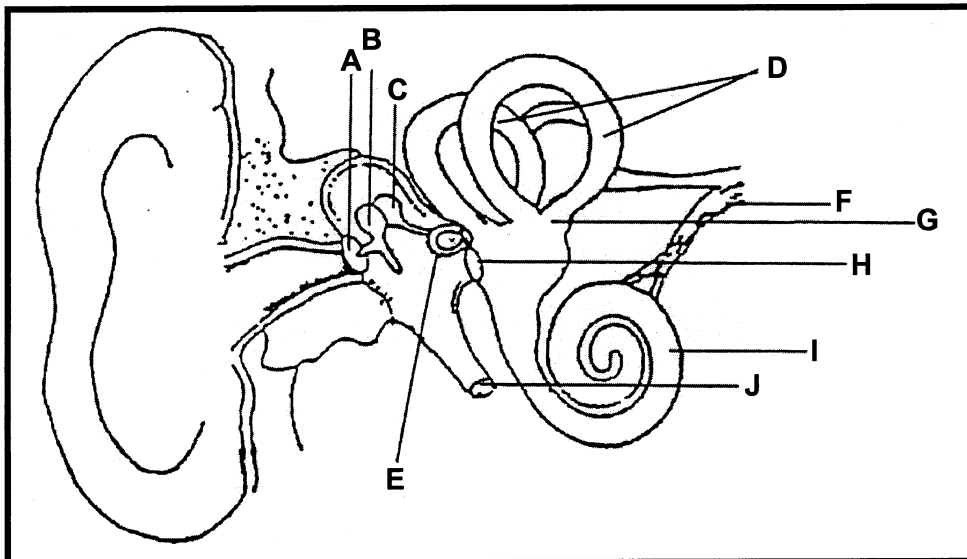
1.1.3 Watter EEN van die volgende strukture gaan nie in of uit die nier nie?

- A. Nieraar
- B. Uretra
- C. Ureter
- D. Nierslagaar

1.1.4 Die donker buitenste area van die nier, is die nier-_____.

- A. medulla
- B. piramide
- C. pelvis
- D. korteks

Vraag 1.1.5 tot 1.1.8 is op die meegaande diagram van die oor gebaseer.



1.1.5 Watter strukture is betrokke by die handhawing van balans?

- A. D en G
- B. G en I
- C. D en I
- D. B en E

1.1.6 Watter deel is aan die ovale venster verbind?

- A. H
- B. E
- C. C
- D. B

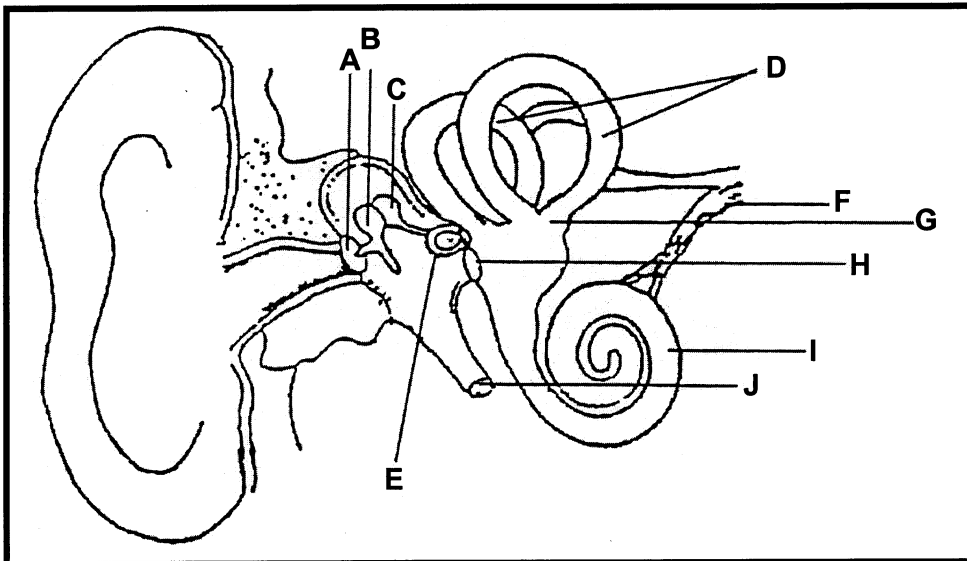
1.1.3 Which ONE of the following structures does not leave or enter the kidney?

- A. Renal vein
- B. Urethra
- C. Ureter
- D. Renal artery

1.1.4 The darker outer area of the kidney is the renal _____.

- A. medulla
- B. pyramid
- C. pelvis
- D. cortex

Questions 1.1.5 to 1.1.8 are based on the following diagram of the ear.



1.1.5 Which structures are concerned with maintaining balance?

- A. D and G
- B. G and I
- C. D and I
- D. B and E

1.1.6 Which part is attached to the oval window?

- A. H
- B. E
- C. C
- D. B

1.1.7 Watter struktuur reguleer lugdruk in die middel-oor?

- A. E
- B. A
- C. C
- D. J

1.1.8 Watter struktuur verwys na die trommelvlies?

- A. Struktuur C
- B. Struktuur A
- C. Struktuur F
- D. Struktuur E

1.1.9 'n Plant verwelk wanneer die _____.

- A. huidmondjies oop is
- B. waterverlies hoër is as die tempo van waterabsorpsie
- C. waterverlies dieselfde is as die waterabsorpsie
- D. waterabsorpsie hoër is as die waterverlies

1.1.10 'n Huidmondjie gaan oop _____.

- A. omdat transpirasie plaasvind
- B. omdat die selwande van sluitselle ewe dik is
- C. om afkoeling van die plant te laat plaasvind
- D. omdat die waterkonsentrasie van die sluitselle se sap hoër is as dié van die sap van aangrensende epidermis-selle

10x2=[20]

1.2 Dui aan of elk van die frases in **KOLOM 2** op net A, net B, beide A en B of op geeneen nie in **KOLOM 1** van toepassing is. Skryf slegs net A, net B, A en B of geen langs die toepaslike vraagnommer neer.

	KOLOM 1	KOLOM 2
1.2.1	A – Stomata B – Hidatodes	Afgee van water in vloeistofvorm wanneer vogtigheid (humiditeit) hoog is
1.2.2	A – Gal B – Urien	Word in die blaas gestoor
1.2.3	A – Slakkehuis B – Halfsirkelvormige kanaal	Betrokke by gehoor
1.2.4	A – Iris B – Lens	Vorm die pupil
1.2.5	A – Hipofise B – Hipotalamus	Liggaam se termostaat

5x2=[10]

1.1.7 Which structure regulates air pressure in the middle ear?

- A. E
- B. A
- C. C
- D. J

1.1.8 Which structure refers to the tympanic membrane?

- A. Structure C
- B. Structure A
- C. Structure F
- D. Structure E

1.1.9 A plant wilts when the _____.

- A. stomata are open
- B. water loss is higher than the rate of water absorption
- C. same amount of water is lost as is absorbed
- D. water absorption is higher than the water loss

1.1.10 A stoma opens _____.

- A. because transpiration is taking place
- B. because the cell walls of guard cells are of equal thickness
- C. to bring about cooling of the plant
- D. because the water concentration of the guard cell sap is higher than that of the sap in adjacent epidermal cells

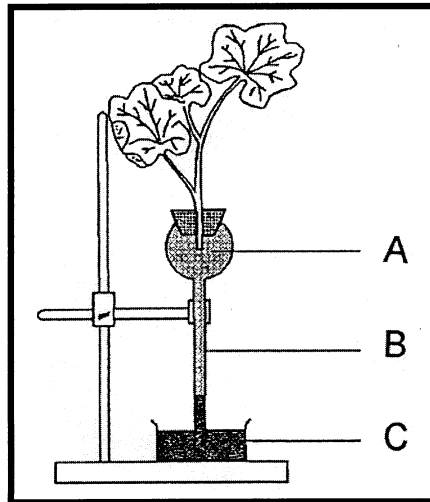
10x2=[20]

1.2 State whether each of the phrases in **COLUMN 2** can be applied to A only, B only, both A and B, or none in **COLUMN 1**. Write down A only, B only, A and B or none next to the appropriate question number.

	COLUMN 1	COLUMN 2
1.2.1	A – Stomata B – Hydathodes	Giving off of water in liquid form when humidity is high
1.2.2	A – Bile B – Urine	Stored in bladder
1.2.3	A – Cochlea B – Semicircular canal	Involved in hearing
1.2.4	A – Iris B – Lens	Forms the pupil
1.2.5	A – Hypophysis B – Hypothalamus	Thermostat of the body

5x2=[10]

- 1.3 Bestudeer die diagram van 'n eksperiment wat uitgevoer is en beantwoord die vrae.



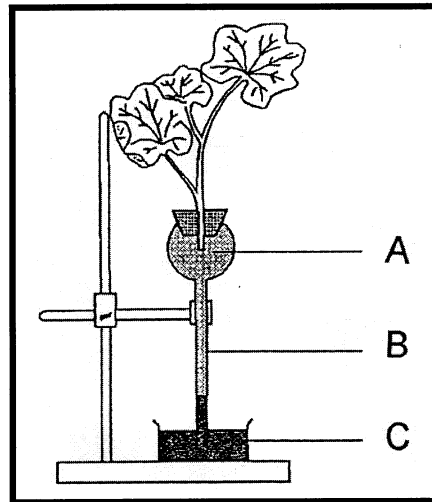
- 1.3.1 Wat is die doel van hierdie eksperiment? (2)
- 1.3.2 Identifiseer dele **A** en **B**. (2)
- 1.3.3 Noem die chemiese stof **C**. (1)
- 1.3.4 Waarom moet die beblaaarde takkie onder water afgesny word? (1)
- 1.3.5 Watter afleidings kan gemaak word uit die resultate? (4)
- [10]**
- 1.4 Gee die korrekte biologiese term vir elk van die volgende beskrywings. Skryf slegs die korrekte term langs die toepaslike vraagnommer neer.
- 1.4.1 Die klier wat die groeihormoon afskei
- 1.4.2 Die druk wat binne 'n plantsel ontwikkel as gevolg van die opname van water
- 1.4.3 Die belangrikste uitskeidingsorgane
- 1.4.4 Die verbindingsbuis tussen die middeloor en die keelholte
- 1.4.5 'n Neuron vervoer prikkels vanaf die sintuig na die brein of rugmurg
- 1.4.6 Toevoeging van water
- 1.4.7 Planthormoon
- 1.4.8 'n Studie van die metaboliese prosesse van plante
- 1.4.9 Die handhawing van die interne balans van liggaamstemperatuur, osmotiese druk en die suikerbalans van die menslike liggaam
- 1.4.10 Die koördinering van reaksies op bepaalde prikkels wat inwerk op verskillende organe van die menslike liggaam

[10]

TOTAAL VIR AFDELING A:

[50]

- 1.3 Study the diagram of an experiment which has been conducted and answer the questions.



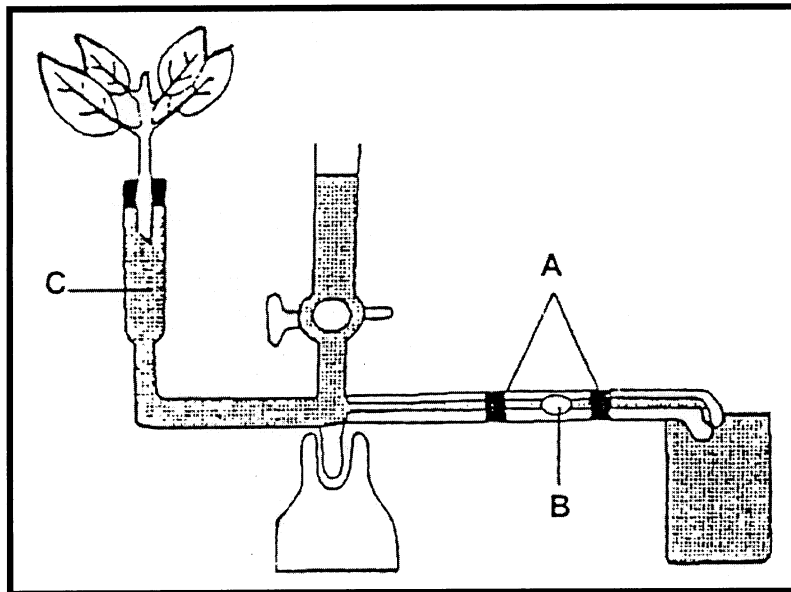
- 1.3.1 What is the aim of this experiment? (2)
- 1.3.2 Identify parts **A** and **B**. (2)
- 1.3.3 Name the chemical substance **C**. (1)
- 1.3.4 Why must the twig be cut off under water? (1)
- 1.3.5 What deductions can be made from the results? (4)
- [10]**
- 1.4 Give the correct biological term for each of the following descriptions. Write down only the correct term next to the relevant question number.
- 1.4.1 The gland which secretes the growth hormone
- 1.4.2 The internal pressure which arises in a plant cell is a result of water which has moved in.
- 1.4.3 The most important excretory organs
- 1.4.4 The connecting tube between the middle ear and the throat cavity
- 1.4.5 A neuron transmits stimuli from the sense organ to the brain or spinal cord.
- 1.4.6 Addition of water
- 1.4.7 Plant hormone
- 1.4.8 A study of the metabolic processes of a plant
- 1.4.9 The maintenance of the internal balance of body temperature, osmotic pressure and sugar balance in the human body.
- 1.4.10 The co-ordinating of reactions brought about by stimuli acting upon the different organs of the human body. (10)

TOTAL FOR SECTION A: [50]

AFDELING B

VRAAG 2

2.1 Bestudeer die diagram hieronder en beantwoord die vrae wat volg.

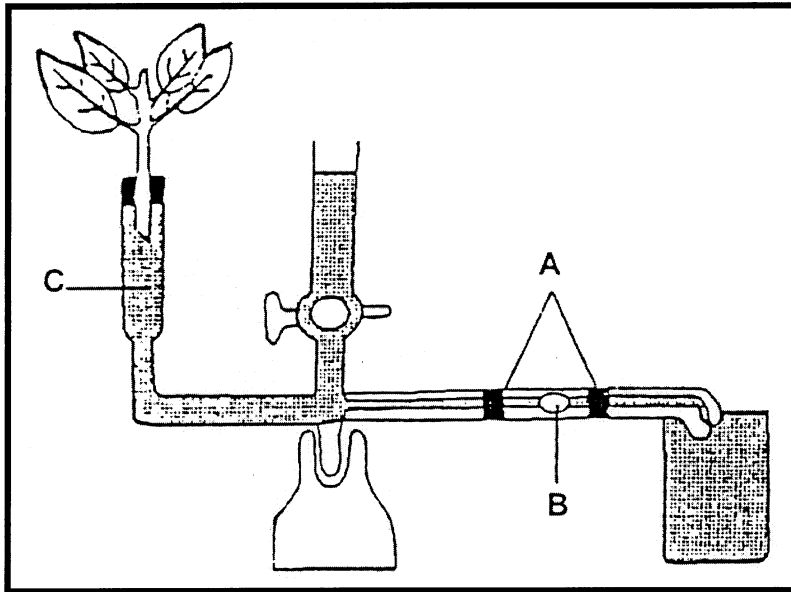


- 2.1.1 Identifiseer die apparaat. (1)
- 2.1.2 Watter biologiese proses kan met hierdie apparaat ondersoek word? (2)
- 2.1.3 Wat word onder die proses geïdentifiseer in Vraag 2.1.2 verstaan? (3)
- 2.1.4 Noem TWEE voorsorgmaatreëls wat jy tydens die opstel van die apparaat sou tref. (2)
- 2.1.5 Noem DRIE uitwendige faktore wat die lesings verkry in die eksperiment sal beïnvloed. Dui ook aan of elkeen die tempo waarteen die lugbol beweeg, sal versnel of vertraag. (6)

SECTION B

QUESTION 2

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



- 2.1.1 Identify the apparatus. (1)
- 2.1.2 What biological process can be investigated by this apparatus? (2)
- 2.1.3 What is meant by the process identified in Question 2.1.2? (3)
- 2.1.4 State TWO precautions which you would take in assembling the apparatus. (2)
- 2.1.5 State THREE external factors which would influence the readings obtained in this experiment. Also indicate whether each factor would slow down or increase the rate at which the bubble of air moves along the glass tube. (6)

2.2 Pas die inligting in **KOLOM 2** by die items in **KOLOM 1** deur die korrekte woord langs die toepaslike vraagnommer neer te skryf.

	KOLOM 1	KOLOM 2
2.2.1	Diffusie	A. Slegs gasse B. Slegs vloeistowwe C. Slegs opgeloste stowwe
2.2.2	Trommelvlies	A. Binne-oor B. Buite-oor C. Middel-oor
2.2.3	Stiebeuel	A. Smaak B. Reuk C. Gehoor
2.2.4	Glukose in lewer	A. Glikogeen B. Insulien C. Gibberelliene
2.2.5	Pupil	A. Iris B. Horingvlies C. Blindevlek
2.2.6	Reuklob	A. Neusholte B. Keelholte C. Mondholte
2.2.7	Papille	A. Neus B. Oor C. Tong
2.2.8	Multipolêre neuron	A. Een uitloper B. Twee uitlopers C. Baie uitlopers
2.2.9	Liggaamstemperatuur	A. 36°C B. 37,5°C C. 38,8°C
2.2.10	Dorsstimulus	A. Skildklier B. Hipofise C. Hipotalamus
2.2.11	Akson	A. Spiersel B. Bloedsel C. Senuweesel

(11)
[25]

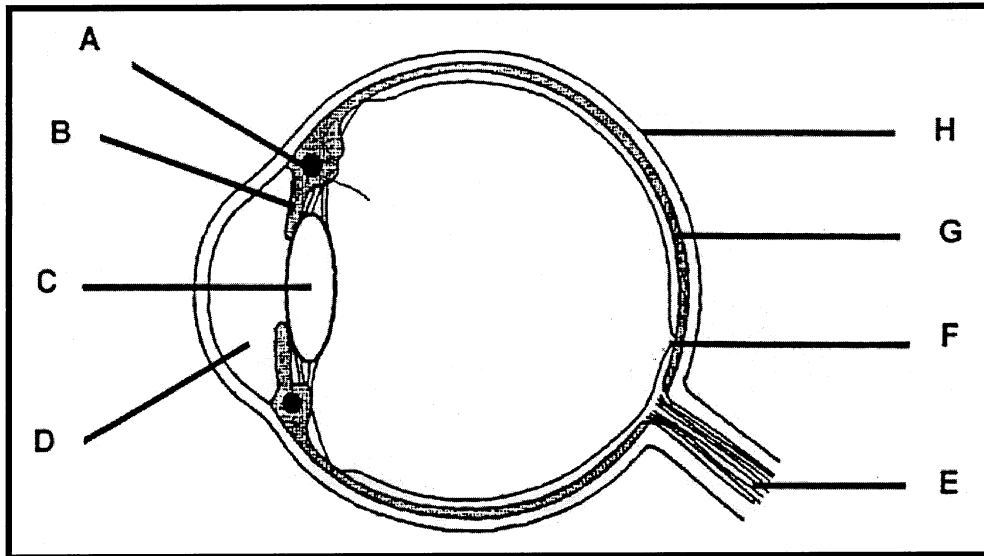
2.2 Match the information in **COLUMN 2** with the items in **COLUMN 1** by writing down the correct word next to the relevant question number.

	COLUMN 1	COLUMN 2
2.2.1	Diffusion	A. Gases only B. Liquid only C. Solutes only
2.2.2	Tympanic membrane	A. Inner ear B. Outer ear C. Middle ear
2.2.3	Stirrup	A. Taste B. Smell C. Sound
2.2.4	Glucose in liver	A. Glycogen B. Insulin C. Gibberellins
2.2.5	Pupil	A. Iris B. Cornea C. Blind spot
2.2.6	Olfactory lobe	A. Nasal cavity B. Pharynx C. Mouth cavity
2.2.7	Papillae	A. Nose B. Ear C. Tongue
2.2.8	Multipolar neuron	A. One process B. Two processes C. Many processes
2.2.9	Body temperature	A. 36°C B. 37,5°C C. 38,8°C
2.2.10	Thirst stimulus	A. Thyroid B. Hypophysis C. Hypothalamus
2.2.11	Axon	A. Muscle cell B. Blood cell C. Nerve cell

(11)
[25]

VRAAG 3

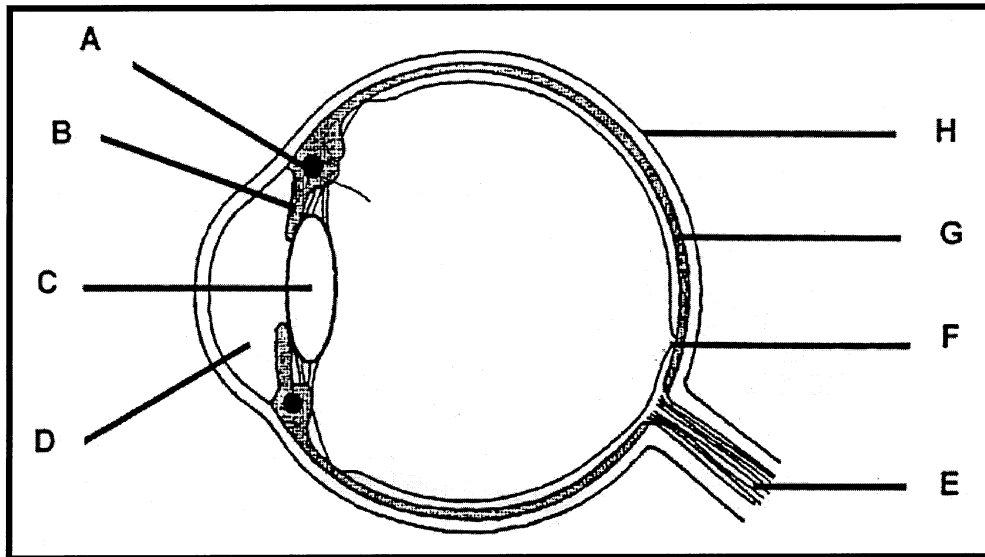
3.1 Bestudeer die onderstaande diagram en beantwoord die vrae wat volg.



- 3.1.1 Benoem dele **A**, **D** en **H**. Skryf slegs die nommers in jou antwoordboek neer en daarnaas die korrekte byskrifte. (3)
- 3.1.2 Watter letter gee kleur aan die oog? (1)
- 3.1.3 Gee die funksies van die volgende letters:
- | | |
|---|-----|
| C | (2) |
| E | (1) |
| F | (1) |
| G | (2) |

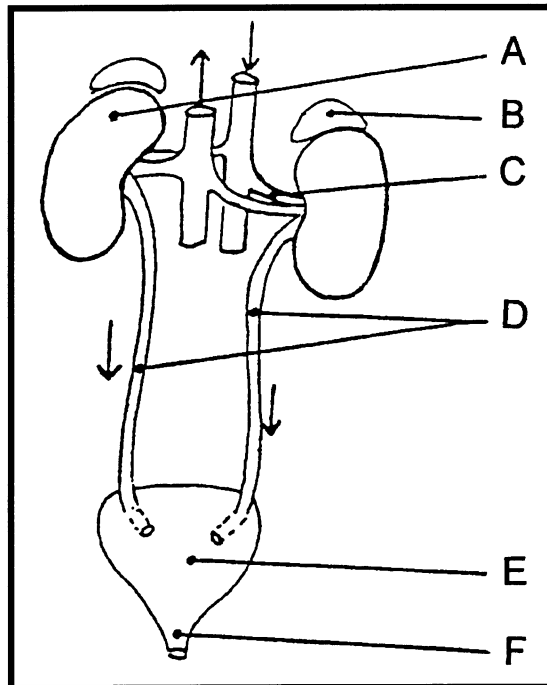
QUESTION 3

3.1 Study the diagram below and answer the questions that follow.



- 3.1.1 Label parts **A**, **D** and **H**. In your answer book write down only the letters and next to each the label. (3)
- 3.1.2 Which letter gives colour to the eye? (1)
- 3.1.3 Give the functions of the following letters:
- | | |
|---|-----|
| C | (2) |
| E | (1) |
| F | (1) |
| G | (2) |

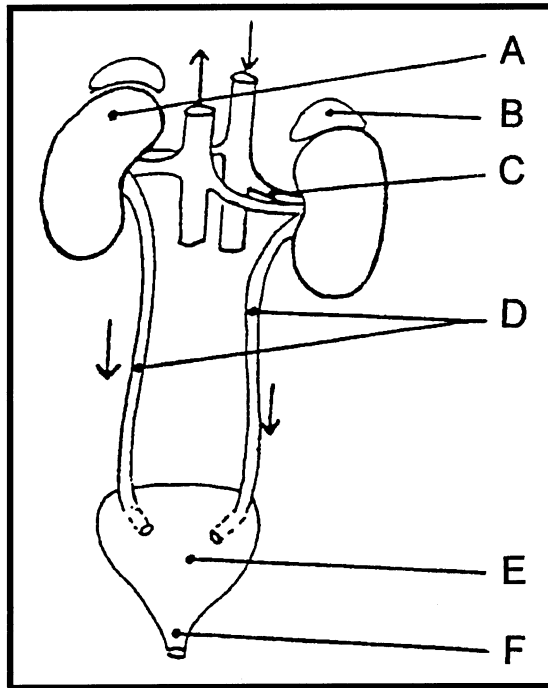
3.2 Bestudeer die diagram en beantwoord die vrae wat daarop volg.



- 3.2.1 Noem die stelsel van die menslike liggaam wat met dié diagram uitgebeeld word. (1)
- 3.2.2 Identifiseer dele **A**, **C** en **D**. (3)
- 3.2.3 Gee die samestelling wat in **E** aangetref word. (5)
- 3.2.4 Watter hormoon wat met osmoregulering te doen het, word deur struktuur **B** afgeskei? (1)
- 3.2.5 Hoekom is dit noodsaaklik dat alle afvalstowwe verwyder moet word? (2)
- 3.2.6 Noem DRIE ander organe wat met hierdie tipe stelsel geassosieer kan word. (3)

[25]

3.2 Study the accompanying diagram and answer the questions that follow.

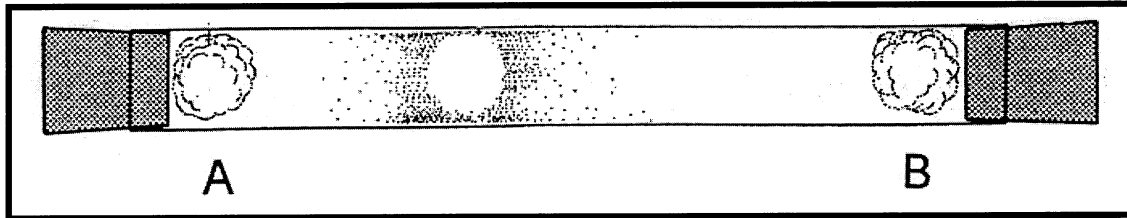


- 3.2.1 Name the system in the human body as illustrated in the diagram. (1)
- 3.2.2 Identify parts **A**, **C** and **D**. (3)
- 3.2.3 Give the composition found in **E**. (5)
- 3.2.4 Which hormone with regard to osmoregulation is secreted by structure **B**? (1)
- 3.2.5 Why is it essential to remove all wastes? (2)
- 3.2.6 Name THREE other organs that can be associated by this type of system. (3)

[25]

VRAAG 4

4.1 Bestudeer die onderstaande diagram en beantwoord die vrae wat volg.

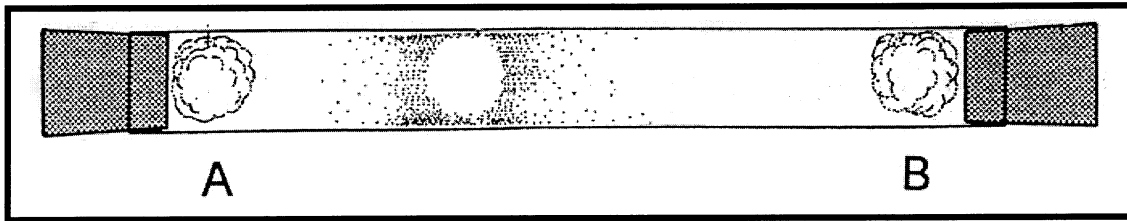


- 4.1.1 Watter chemikalieë word by **A** en **B** gebruik? (2)
- 4.1.2 Watter proses word hier geïllustreer? Beskryf hierdie proses in jou eie woorde. (3)
- 4.2 Wat word verstaan onder die term **osmose**? (5)
- 4.3 Die volgende stellings is WAAR of ONWAAR. Indien ONWAAR, gee die korrekte antwoord. Skryf elke antwoord langs die toepaslike nommer op 'n nuwe reël neer.
- 4.3.1 Hidrolise is die onttrekking van water.
- 4.3.2 Metaboliese water is water wat reeds in vloeistofvorm is.
- 4.3.3 'n Toename in glukose in die bloed sal die Eilandjies van Langerhans in die lewer stimuleer om insulien af te skei.
- 4.3.4 Die skildklier skei die hormoon tiroksien af.
- 4.3.5 Die eksokriene kliere skei hormone af wat direk in die bloedstroom geabsorbeer word. 5x2=(10)
- 4.4 Gee die uitskeidingstowwe van die dikderm, lewer en vel. (4)
- 4.5 Wat omsluit en beskerm die nier? (1)

[25]

QUESTION 4

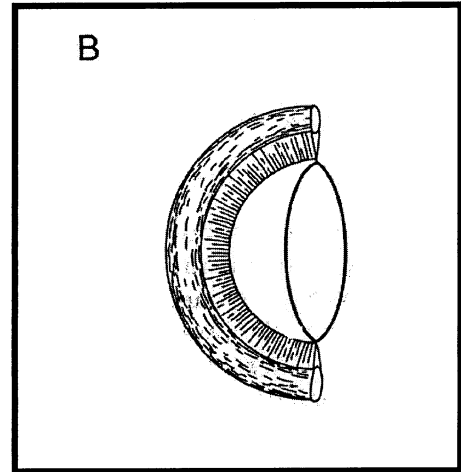
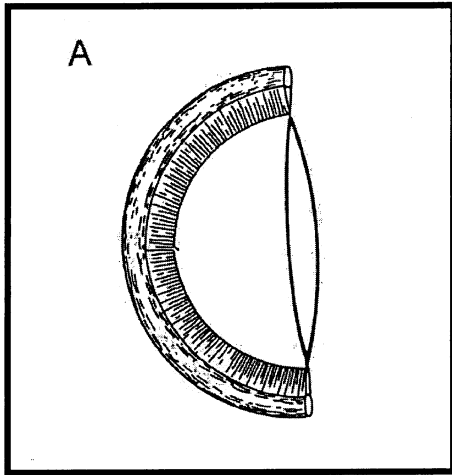
4.1 Study the diagram below and answer the questions that follow.



- 4.1.1 Which chemicals are used at **A** and **B**? (2)
- 4.1.2 Which process is illustrated here? Describe this process in your own words. (3)
- 4.2 What is understood by the term **osmosis**? (5)
- 4.3 The following statements are either TRUE or FALSE. If FALSE, give the correct answer. Write down each answer next to the appropriate number on a new line.
- 4.3.1 Hydrolysis is the loss of water.
- 4.3.2 Metabolic water is water already in a liquid form.
- 4.3.3 An increase of glucose in the blood will stimulate islets of Langerhans in the liver to secrete insulin.
- 4.3.4 The thyroid secretes the hormone thyroxin.
- 4.3.5 The exocrine glands excrete hormones which are sent directly into the blood. 5x2=(10)
- 4.4 Give the excretory substances of the colon, liver and skin. (4)
- 4.5 What surrounds and protects the kidney? (1)
- [25]**

VRAAG 5

5.1 Die volgende diagram illustreer die proses van akkommodasie.



5.1.1 Definieer die proses van akkommodasie. (5)

5.1.2 Beskryf wat in diagram **A** en diagram **B** gebeur. (4)

5.2 Noem die gevolge van oorafskieding van die volgende hormone:

5.2.1 Groeihormoon (1)

5.2.2 Tiroksien (1)

5.2.3 Insulien (1)

5.3 Hoe word die niere in posisie gehou? (5)

5.4 Noem DRIE verskille in tabelvorm (tabuleer) tussen guttasie en transpirasie. (6)

5.5 Noem TWEE funksies van die nier. (2)

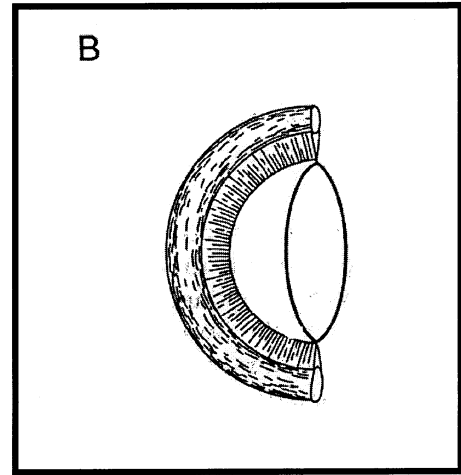
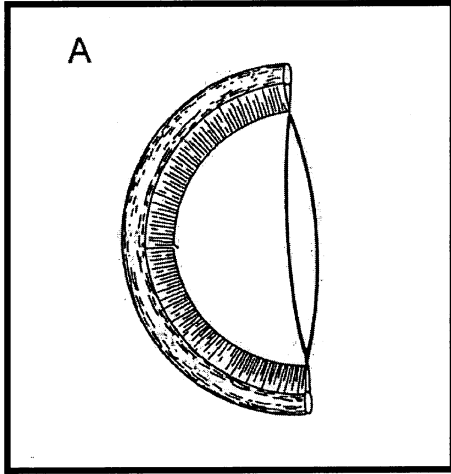
[25]

TOTAAL VIR AFDELING B: [100]

TOTAAL: 150

QUESTION 5

5.1 The following diagrams illustrate the process of accommodation.



5.1.1 Define the process of accommodation. (5)

5.1.2 Describe what is happening in diagram **A** and diagram **B**. (4)

5.2 Name the consequences of over-secretion of the following hormones:

5.2.1 Growth hormone (1)

5.2.2 Thyroxin (1)

5.2.3 Insulin (1)

5.3 How is the kidney kept in position? (5)

5.4 Name **THREE** differences in table form (tabulate) between guttation and transpiration. (6)

5.5 State **TWO** functions of the kidney. (2)

[25]

TOTAL FOR SECTION B: [100]

TOTAL: 150