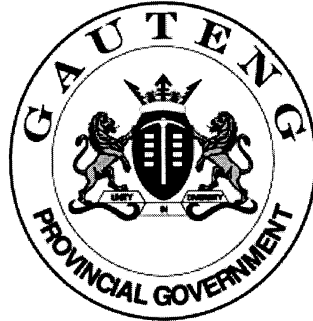


**SENIOR CERTIFICATE
EXAMINATION
SENIORSERTIFIKAAT-EKSAMEN**



**FEBRUARY / FEBRUARIE
MARCH / MAART**

2005

PHYSIOLOGY

FISIOLOGIE

SG

307-2/0

PHYSIOLOGY SG



**16 pages
16 bladsye**

X05



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GAUTENGSE DEPARTEMENT VAN ONDERWYS
SENIORSERTIFIKAAT-EKSAMEN

FISIOLOGIE SG

TYD: 3 uur

PUNTE: 300

INSTRUKSIES:

- Die vraestel bestaan uit TWEE afdelings: A en B – Totaal Afdeling A: 100
Totaal Afdeling B: 200
 - Al die vrae is VERPLIGTEND.
 - Beantwoord Vraag 1 (meervoudige keusevrae) op die **antwoordblad** aan die **binnekant van die omslag** van jou **antwoordboek**.
 - Nommer AL die vrae korrek.
-
-

AFDELING A**VRAAG 1
MEERVOUDIGE KEUSEVRAE**

Vier moontlikhede word as antwoord op elk van die volgende vrae verskaf. Dui die korrekte antwoord met 'n kruis (X) oor die ooreenstemmende letter op die **antwoordblad** aan die **binnekant van die omslag** van jou **antwoordboek** aan.

VOORBEELD: Speeksel word afgeskei in die _____.

- A. mond
- B. esofagus
- C. maag
- D. duodenum

ANTWOORD:

<input checked="" type="checkbox"/>	B	C	D
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GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

PHYSIOLOGY SG

TIME: 3 hours

MARKS: 300

INSTRUCTIONS:

- The question paper consists of TWO sections: A and B – Total Section A: 100
Total Section B: 200
 - ALL questions are COMPULSORY.
 - Answer Question 1 (multiple-choice questions) on the **answer sheet** on the **inside cover** of the **answer book**.
 - Number ALL the questions correctly.
-
-

SECTION A

QUESTION 1
MULTIPLE-CHOICE QUESTIONS

Four possibilities are given as the answer to each of the following questions. Indicate the correct answer by marking the correct letter with a cross (X) on the **answer sheet** on the **inside cover** of your **answer book**.

EXAMPLE: Saliva is secreted in the _____.

- A. mouth
- B. oesophagus
- C. stomach
- D. duodenum

ANSWER:

A	B	C	D
--------------	---	---	---

- 1.1 Watter een van die onderstaande kliere funksioneer as 'n eksokriene sowel as 'n endokriene klier?
- A. Adrenale klier (byniere)
 - B. Pankreas
 - C. Hipofise (Pituitêre) klier
 - D. Tiroïed (Skildklier)
- 1.2 Watter een van die onderstaande is nie 'n eienskap van hormone nie?
- A. Hormone word deur buislose kliere vrygestel.
 - B. Die meeste hormone is steroïede.
 - C. Hormone het 'n baie kort leeftyd.
 - D. Hormone is chemiese boodskappers wat teikenselle stimuleer.
- 1.3 Die substans in die nier wat die pH reguleer is _____.
- A. ensieme
 - B. buffers
 - C. filtraat
 - D. hormone
- 1.4 As die glomerulus (mikrofilter) van 'n niernefron beskadig is, sal die volgende stof in die urine teenwoordig wees.
- A. Glukose
 - B. Proteïene
 - C. Water
 - D. Aminosure
- 1.5 Watter tipe neuron vervoer impulse vanaf jou regterbeen (reseptore) na die rugmurg?
- A. Bipolêre neuron
 - B. Verbindingsneuron
 - C. Multipolêre neuron
 - D. Monopolêre neuron
- 1.6 Die sensasies van gehoor, smaak en reuk word geïnterpreteer in die _____.
- A. pariëtale lob van die serebrum
 - B. oksipitale lob van die serebrum
 - C. frontale lob van die serebrum
 - D. temporale lob van die serebrum
- 1.7 Die witstof is geleë in die _____.
- A. binnekant van die serebrum
 - B. buitekant van die serebrum
 - C. binnekant van die rugmurg
 - D. sentrale kanaal van die rugmurg

- 1.1 Which one of the following glands functions as both an exocrine gland and an endocrine gland?
- A. Adrenal gland
 - B. Pancreas
 - C. Hypophysis / Pituitary gland
 - D. Thyroid gland
- 1.2 Which one of the following is not a property of hormones?
- A. Hormones are secreted by ductless glands.
 - B. Most hormones are steroids.
 - C. Hormones have a very short life.
 - D. Hormones are chemicals which stimulate target cells.
- 1.3 The substance in the kidney that regulates the pH is _____.
- A. enzymes
 - B. buffers
 - C. filtrate
 - D. hormones
- 1.4 The following substance will be present in one's urine if the glomerulus (micro-filter) in the kidney nephron is damaged.
- A. Glucose
 - B. Proteins
 - C. Water
 - D. Amino acids
- 1.5 Which type of neuron will conduct the impulses from your right leg (receptors) to the spinal cord?
- A. Bipolar neuron
 - B. Connecting neuron
 - C. Multipolar neuron
 - D. Monopolar neuron
- 1.6 The sensations of hearing, tasting and smelling are interpreted in the _____.
- A. parietal lobe of the cerebrum
 - B. occipital lobe of the cerebrum
 - C. frontal lobe of the cerebrum
 - D. temporal lobe of the cerebrum
- 1.7 White matter is situated on the _____.
- A. inside of the cerebrum
 - B. outside of the cerebrum
 - C. inside of the spinal cord
 - D. central canal of the spinal cord

- 1.8 Watter een van die volgende is die gevolg van simpatiese stimulasie?
- A. Vertraagde hartklop
 - B. Versnelde peristalse
 - C. Verhoogde speekselafskeiding
 - D. Verwyde pupille
- 1.9 As 'n persoon 'n gebrek aan rodopsien het, sal hy/sy die volgende ooggebrek hê:
- A. Kleurblindheid
 - B. Versiendheid
 - C. Nagblindheid
 - D. Bysiendheid
- 1.10 Middelloorontsteking word veroorsaak deur _____.
- A. die trommelvlies /timpanum wat gebars het.
 - B. serumen wat in die uitwendige gehoorkanaal lê.
 - C. die buis van Eustachius wat met slym gevul is.
 - D. die sensoriese haarselle in die koglea wat beskadig is.
- 1.11 'n Onderafskeiding (hiposekresie) van TSH by 'n kind veroorsaak _____.
- A. akromegalie
 - B. 'n dwerg met vertraagde seksuele ontwikkeling
 - C. 'n vroeë geslagsrypheid
 - D. 'n hoë metaboliese tempo
- 1.12 Die volgende hormone word deur die neurohipofise afgeskei:
- A. STH en TSH
 - B. FSH en oksitosien
 - C. ADH en oksitosien
 - D. Prolaktien en MSH
- 1.13 Albino's het 'n tekort aan die volgende pigment in hulle oë, hare en vel.
- A. Hemoglobien
 - B. Melanien
 - C. Oksihemoglobien
 - D. Bilirubien
- 1.14 Watter hormoon sal die pankreas afskei indien die bloedsuikervlak te hoog is?
- A. Glukagon
 - B. Insulien
 - C. Adrenalin
 - D. Kalsitonien

- 1.8 Which one of the following is the result of sympathetic stimulation?
- A. Slower heart beat
 - B. Increased activity of peristalsis
 - C. Increased saliva secretion
 - D. Dilated pupils
- 1.9 If a person lacks rhodopsin, he/she will have the following eye defect:
- A. Colour blindness
 - B. Far sightedness
 - C. Night blindness
 - D. Near sightedness
- 1.10 Middle-ear infection is caused _____.
- A. by a ruptured tympanum
 - B. when cerumen accumulates in the external auditory canal
 - C. when the Eustachian tube is filled with mucus
 - D. when the sensory hair cells in the cochlea are damaged
- 1.11 A hyposecretion of TSH in a child causes _____.
- A. acromegaly
 - B. a dwarf with retarded sexual development
 - C. an early sexual development
 - D. a high metabolic rate
- 1.12 The following hormones are secreted by the neurohypophysis:
- A. STH and TSH
 - B. FSH and oxytocin
 - C. ADH and oxytocin
 - D. Prolactin and MSH
- 1.13 Albinos lack the following pigment in their eyes, hair and skin.
- A. Haemoglobin
 - B. Melanin
 - C. Oxyhaemoglobin
 - D. Bilirubin
- 1.14 Which hormone will the pancreas secrete if the blood sugar level is too high?
- A. Glucagon
 - B. Insulin
 - C. Adrenaline
 - D. Calcitonin

- 1.15 Die hormoon wat in Vraag 1.14 geïdentifiseer word, stimuleer die lewer om _____.
- A. gal te produseer
 - B. glukose om te skakel na glikogeen
 - C. glikogeen om te skakel na glukose
 - D. glukose om te skakel na aminosure
- 1.16 Wat is die normale bloedglukosevlak van 'n gesonde persoon?
- A. 100 mg / 100 ml bloed
 - B. 28 mg / 100 ml bloed
 - C. 100 mg / 1 ml bloed
 - D. 80 mg / 80 ml bloed
- 1.17 Hipo- of ondersekresie van ADH veroorsaak _____.
- A. dat klein hoeveelhede gekonsentreerde urine geproduseer word
 - B. dat groot hoeveelhede verdunde urine geproduseer word
 - C. dat 'n persoon se bloedsuikervlak baie hoog sal wees
 - D. nierstene
- 1.18 'n Ryp Graafse follikel sal die volgende hormone afskei:
- A. Prolaktien en oksitosien
 - B. Testosteroon en progesteron
 - C. Estrogeen en progesteron
 - D. Slegs progesteron
- 1.19 Watter metode van geboortebepaling (voorbehoeding) sal die beste werk?
- A. Die Pil
 - B. Onttrekking
 - C. Intra-uteriene apparaat
 - D. Vasektomie en die afbinding van die Fallopiëse buise
- 1.20 Watter voorbehoedmiddel voorkom swangerskap asook MIV/Vigs?
- A. Die Pil (mondelinge voorbehoedmiddel)
 - B. Die kondoom
 - C. Intra-uteriene apparaat
 - D. Diafragma
- 1.21 Bloed wat van die plasenta na die fetus toe gaan, vervoer _____.
- A. metaboliese afvalstowwe
 - B. voedingstowwe en suurstof
 - C. koolstofdiksied en voedingstowwe
 - D. metaboliese afvalstowwe en koolstofdiksied

- 1.15 The hormone identified in Question 1.14 stimulates the liver to _____.
- A. produce bile
 - B. to convert glucose to glycogen
 - C. to convert glycogen to glucose
 - D. to convert glucose to amino acids
- 1.16 What is the normal blood sugar level of an average person?
- A. 100 mg / 100 ml blood
 - B. 28 mg / 100 ml blood
 - C. 100 mg / 1 ml blood
 - D. 80 mg / 80 ml blood
- 1.17 Hyposecretion of ADH causes _____.
- A. the production of a small volume of concentrated urine
 - B. the production of a large volume of diluted urine
 - C. a high blood sugar level in a person
 - D. kidney stones
- 1.18 A mature Graafian follicle will secrete the following hormones:
- A. Prolactin and oxytocin
 - B. Testosterone and progesterone
 - C. Oestrogen and progesterone
 - D. Progesterone only
- 1.19 Which method of contraception will be most efficient?
- A. The Pill
 - B. Withdrawal
 - C. Intra-uterine device
 - D. Vasectomy and the ligation of the Fallopian tubes
- 1.20 Which method of contraception will prevent pregnancy as well as HIV/Aids?
- A. The Pill (Oral contraceptive)
 - B. The condom
 - C. The intra-uterine device
 - D. The diaphragm
- 1.21 Blood from the placenta to the fetus carries _____.
- A. metabolic waste products
 - B. nutrients and oxygen
 - C. carbon dioxide and nutrients
 - D. metabolic waste and carbon dioxide

- 1.22 Die decidua en die chorioniese villi vorm die _____.
- A. naelstring
 - B. serviks
 - C. plasenta
 - D. endometrium
- 1.23 Die hormoon verantwoordelik vir die sekondêre vroulike geslagseienskappe, is _____.
- A. prolaktien
 - B. testosteroon
 - C. progesteron
 - D. estrogeen
- 1.24 Die spermatozoa bevat _____.
- A. 22 chromosome en 'n X of 'n Y chromosoom
 - B. 44 chromosome en XX chromosome
 - C. 44 chromosome en XY chromosome
 - D. 24 chromosome
- 1.25 Die ontwikkelende spermatiede in die spermbuisies word gevoed deur die _____.
- A. Sertoli selle
 - B. Leydig selle
 - C. Interstisiële selle
 - D. Seminale vesikels

25x2=[50]

VRAAG 2

Gee die **fisiologiese term** vir elk van die volgende omskrywings. Skryf elke antwoord op 'n nuwe lyn.

- 2.1 Die instandhouding van 'n konstante interne omgewing vir normale selffunksionering
- 2.2 Die selle tussen die spermbuisies wat die hormoon testosteroon afskei
- 2.3 Die afbreek en uitskeiding van die boonste lae van die endometrium met 'n mate van bloeding
- 2.4 Die gebreksiekte veroorsaak deur die hiper- of oorafskeiding van die groeihormoon by volwassenes
- 2.5 Die papille op die tong wat 'n bitter smaak waarneem
- 2.6 Die gedeelte van die brein wat verantwoordelik is vir temperatuurregulering

- 1.22 The decidua and the chorionic villi form the _____.
- A. umbilical cord
 - B. cervix
 - C. placenta
 - D. endometrium
- 1.23 The hormone responsible for female secondary sex characteristics is _____.
- A. prolactin
 - B. testosterone
 - C. progesterone
 - D. oestrogen
- 1.24 The spermatozoa contains _____.
- A. 22 chromosomes and an **X** or a **Y** chromosome
 - B. 44 chromosomes and **XX** chromosomes
 - C. 44 chromosomes and **XY** chromosomes
 - D. 24 chromosomes
- 1.25 The developing spermatids in the seminiferous tubules are nourished by _____.
- A. Sertoli cells
 - B. Leydig cells
 - C. Interstitial cells
 - D. Seminal vesicles

25x2=[50]

QUESTION 2

Give the **physiological term** for each of the following descriptions. Write each answer on a new line.

- 2.1 The maintenance of a constant internal environment for normal cell functioning
- 2.2 The cells between the seminiferous tubules that secrete the hormone testosterone
- 2.3 The breakdown and shedding of the endometrium of the uterine wall as well as blood
- 2.4 The deficiency disease caused by the hypersecretion of the growth hormone in adults
- 2.5 The papillae on the tongue that detect a bitter taste
- 2.6 The part of the brain that regulates body temperature

- 2.7 Die laag in die oog wat bloedvatryk is
- 2.8 Die funksionele deel van die nier
- 2.9 Die metaboliese afvalproduk wat gevorm word deur die afbreek van aminosure
- 2.10 Die deel van die senuweestelsel wat uit die brein en die rugmurg bestaan [10]

VRAAG 3

Kies die **term** uit **Kolom B** wat die beste by die **omskrywing** in **Kolom A** pas. Skryf net die letter neer van die term wat jy gekies het teenoor die toepaslike nommer in jou antwoordboek.

KOLOM A		KOLOM B	
3.1	Gevul met serebrospinale vog	A.	Olieklier
3.2	Bevat rodopsien	B.	Laag van Malpighi
3.3	Bevat melanosiete wat melanien produseer	C.	Gekondisioneerde refleks
3.4	Multipolêre neuron	D.	Sensoriese neuron
3.5	Verantwoordelik vir balans	E.	Smaakpapille op die tong
3.6	Verantwoordelik vir kleurvisie	F.	Ongekondisioneerde refleks
3.7	Is geleë in die ampulla	G.	Keëltjies
3.8	Verbind die sensoriese en motoriese neurone	H.	Insulien
3.9	Sekreter sebum	I.	Sentrale kanaal
3.10	Naakte senuwee-eindpunte	J.	Krista
3.11	Chemoreseptore	K.	Amnionvloeistof
3.12	Malleus, inkus, stapes	L.	Stafies
3.13	Beskerm die fetus teen skokke en temperatuurskommeling	M.	Adrenalien
3.14	Knip van oë en hoes	N.	Motoriese neuron
3.15	Die veg-of-vlughormoon	O.	Halfsirkelvormige kanale
		P.	Interneurone
		Q.	Epidermis
		R.	Ossikels (Gehoorbeentjies)

[15]

- 2.7 The layer in the eye that is rich in blood vessels
- 2.8 The functional part of the kidney
- 2.9 The metabolic waste product derived from the breakdown of amino acids
- 2.10 The part of the nervous system that consists of the brain and the spinal cord [10]

QUESTION 3

Select the **term** in **Column B** that could best be associated with the **description** in **Column A**. Write only the letter of the term you have selected next to the appropriate number in your answer book.

COLUMN A		COLUMN B	
3.1	Filled with cerebrospinal fluid	A.	Oil gland
3.2	Contains rhodopsin	B.	Malpighian layer
3.3	Contains melanocytes that produce melanin	C.	Conditioned reflex
3.4	Multipolar neuron	D.	Sensory neuron
3.5	Responsible for balance	E.	Taste buds on the tongue
3.6	Responsible for colour vision	F.	Unconditioned reflex
3.7	Situated in the ampulla	G.	Cones
3.8	Connects the sensory and motor neurons	H.	Insulin
3.9	Secretes sebum	I.	Central canal
3.10	Free nerve endings	J.	Cristae
3.11	Chemoreceptors	K.	Amniotic fluid
3.12	Malleus, incus, stapes	L.	Rods
3.13	Protects fetus against shock and temperature changes	M.	Adrenaline
3.14	Blink of eyes and coughing	N.	Motor neuron
3.15	The fight or flight hormone	O.	Semicircular canals
		P.	Inter-neurons
		Q.	Epidermis
		R.	Ossicles

[15]

VRAAG 4

Bestudeer die volgende diagram versigtig en benoem strukture 1 tot 15. Skryf net die nommers onder mekaar in jou antwoordboek neer en die name van die strukture daarnaas.

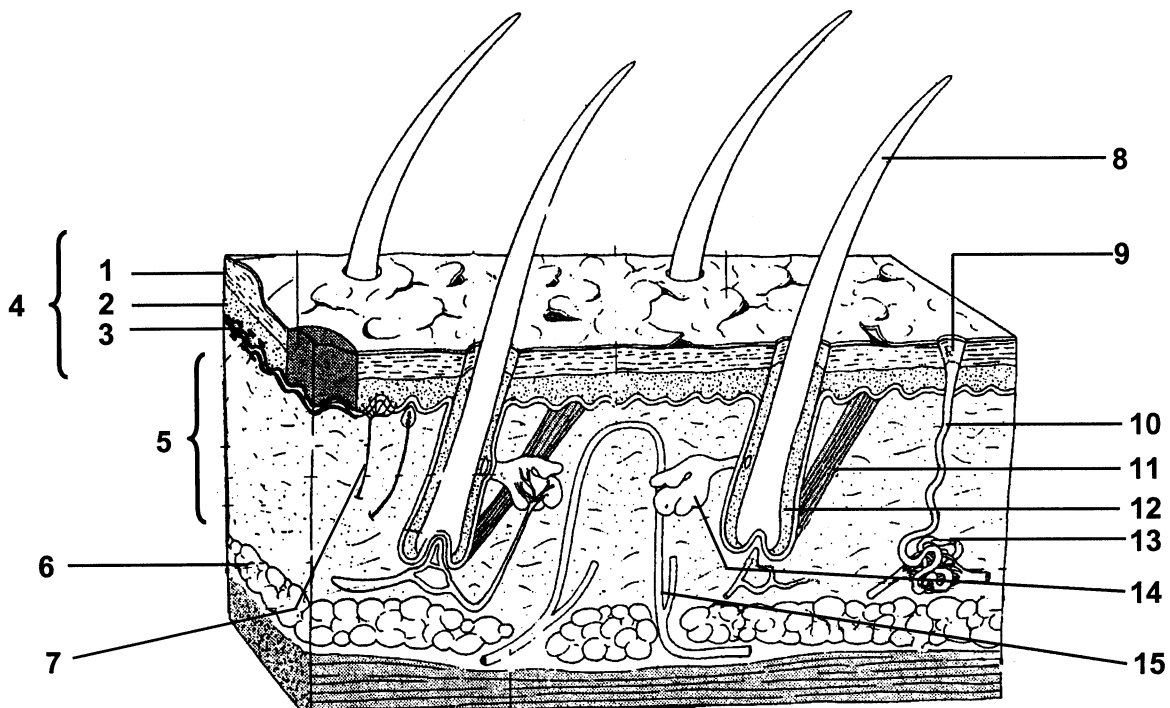


Fig 4.1: Struktuur in die menslike liggaam

[15]

VRAAG 5

Voltooi die onderstaande tabel wat verband hou met die onder en oorafskeiding (hipo- en hipersekresie) van hormone.

Skryf die nommers onder mekaar in jou antwoordboek neer en slegs die korrekte antwoord teenoor die nommer.

Bv. Miksideem 5.11 Tiroksien 5.12 Hiposekresie

TABEL 5: HIPO- EN HIPERSEKRESIE VAN HORMONE

GEBREKSIEKTE / ABNORMALITEIT	HORMOON	HIPO / HIPER SEKRESIE
Diabetes mellitus	5.1	5.2
Eksoftalmiese goiter	5.3	5.4
Cushing se sindroom	5.5	5.6
Diabetes insipidus	5.7	5.8
Osteoporose	5.9	5.10

[10]

TOTAAL VIR AFDELING A:

[100]

QUESTION 4

Carefully study the following diagram, then label structures 1 to 15. Write the numbers one below the other in your answer book and only the answer next to each.

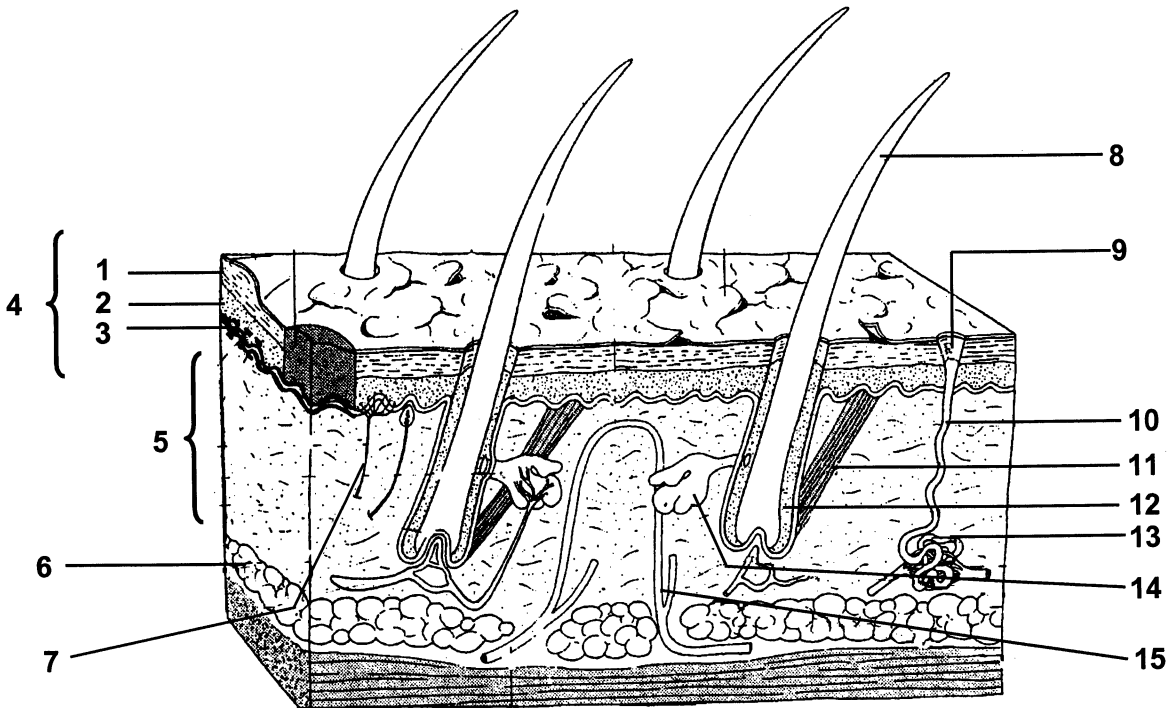


Fig 4.1: Structure in the human body

[15]

QUESTION 5

Complete the table below concerning the hypo- or hypersecretion of hormones. Write the numbers one below the other in your answer book with only the correct answer next to each.

E.g. myxoedema 5.11 thyroxine 5.12 hyposecretion

TABLE 5: HYPO- AND HYPERSECRETION OF HORMONES		
DEFICIENCY DISEASE / ABNORMALITY	HORMONE	HYPO / HYPER SECRETION
Diabetes mellitus	5.1	5.2
Exophthalmic goitre	5.3	5.4
Cushing's syndrome	5.5	5.6
Diabetes insipidus	5.7	5.8
Osteoporosis	5.9	5.10

[10]

TOTAL FOR SECTION A:

[100]

AFDELING B

Beantwoord AL die vrae in hierdie afdeling.

VRAAG 6

- 6.1 Bestudeer die onderstaande diagram en beantwoord die vrae wat volg. **A, B, C** en **D** verteenwoordig intra- en ekstrasellulêre vloeistowwe in die liggaam.

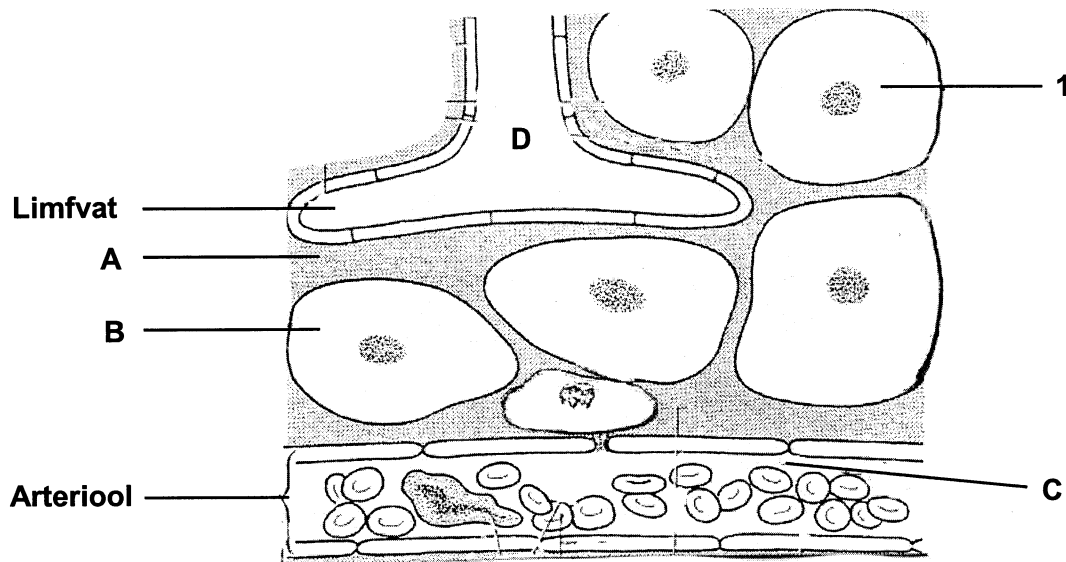


Fig 6 1: Diagrammatiese voorstelling van intra- en ekstrasellulêre vloeistowwe in die liggaam

- 6.1.1 No. 1 in die diagram stel 'n sel voor. (1)
- (a) Noem die vloeistof **A** buite om die sel. (1)
- (b) Noem vloeistof **B** binne-in die sel. (1)
- 6.1.2 Noem vloeistof **C**, in die arteriole. (1)
- 6.1.3 Noem en bespreek kortliks VYF faktore wat in vloeistof **A** konstant gehou moet word vir normale funksionering van die selle. (10)
- 6.1.4 Medikasie wat kortisoen bevat word soms aan 'n pasiënt voorgeskryf.
- (a) Noem 'n belangrike funksie wat kortisoen vir die herstel van die pasiënt inhou. (2)
- (b) Waar in die liggaam word kortisoen natuurlik vervaardig? (1)
- (c) Noem en bespreek kortliks die twee faktore (substansie) wat in vloeistof A voorkom wat nadelig beïnvloed word deur die langdurige gebruik van kortisoen. (4)

SECTION B

Answer ALL the questions in this section.

QUESTION 6

- 6.1 Study the diagram below and answer the questions that follow.
A, B, C and **D** represent intra- and extracellular fluids in the body.

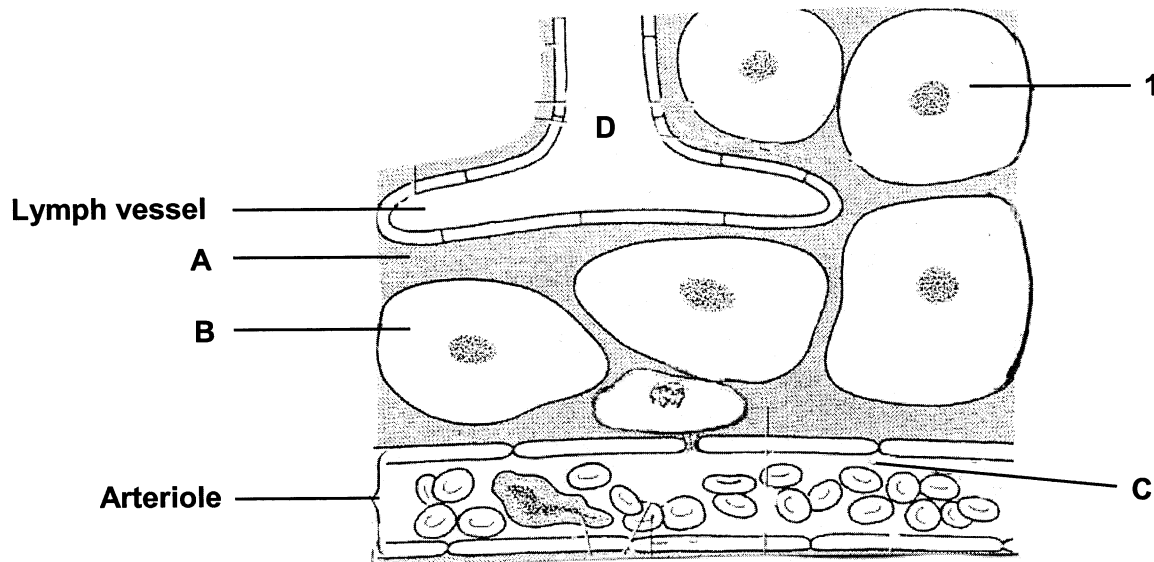


Fig 6.1: Diagrammatic presentation of intra- and extracellular fluids in the body

- 6.1.1 Number **1** in the diagram is a cell.
- (a) Name fluid **A** that surrounds the cell. (1)
 (b) Name fluid **B** inside the cell. (1)
- 6.1.2 Name fluid **C** present in the arterioles. (1)
- 6.1.3 Name and briefly discuss FIVE factors in fluid **A** that must be kept constant to ensure normal cell functioning. (10)
- 6.1.4 Cortisone containing medicine is sometimes prescribed to a patient.
- (a) Name the most important effect of cortisone in the recovery of the patient. (2)
 (b) Where in the body is cortisone normally produced? (1)
 (c) Name and briefly discuss the two factors (substances) present in fluid **A** that will be negatively influenced by the continuous use of cortisone. (4)

6.2 Bestudeer die onderstaande diagram van die vroulike voortplantingstelsel.

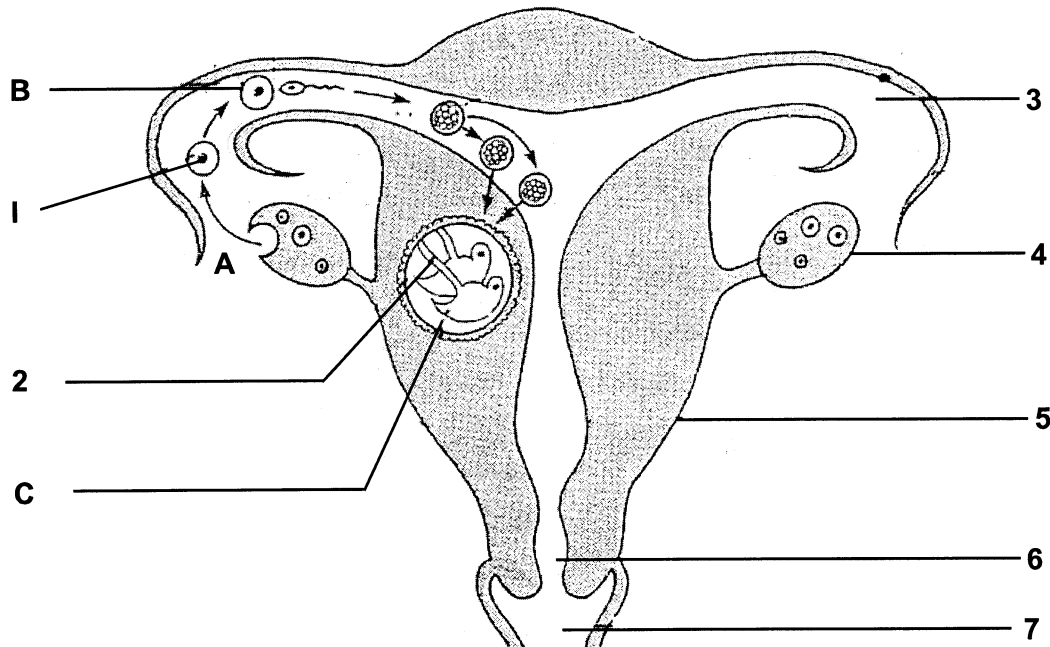


Fig 6.2: Vroulike voortplantingstelsel

- 6.2.1 Benoem strukture 1 tot 7. (7)
- 6.2.2 Watter proses vind by **A** in die diagram plaas? (2)
- 6.2.3 Bevrugting vind by **B** plaas.
- (a) Wat word die produk van bevrugting genoem? (1)
- (b) Wat word die ontwikkelende struktuur **C** tydens die eerste agt weke van swangerskap genoem? (1)
- (c) Wat word die ontwikkelende struktuur **C** ná die eerste agt weke genoem? (1)
- 6.2.4 Wat sal die produk van hierdie meervoudige swangerskap wees? (2)
- 6.2.5 Noem die hormone wat vir die volgende verantwoordelik is:
- (a) Sekondêre vroulike geslagseienskappe
- (b) Sametrekking van die uterus tydens die geboorteproses
- (c) Vorming van melk in die melkkliere
- (d) Die vrylating en vloei van melk tydens laktasie
- (e) Vorming van 'n nuwe Graafse follikel (5)
- 6.2.6 Noem die struktuur wat die ontwikkelende embrio sal beskerm teen:
- (a) Bakteriële infeksie van buite
- (b) Bakterieë vanaf die moeder (2)

6.2 Study the diagram of the female reproductive system below.

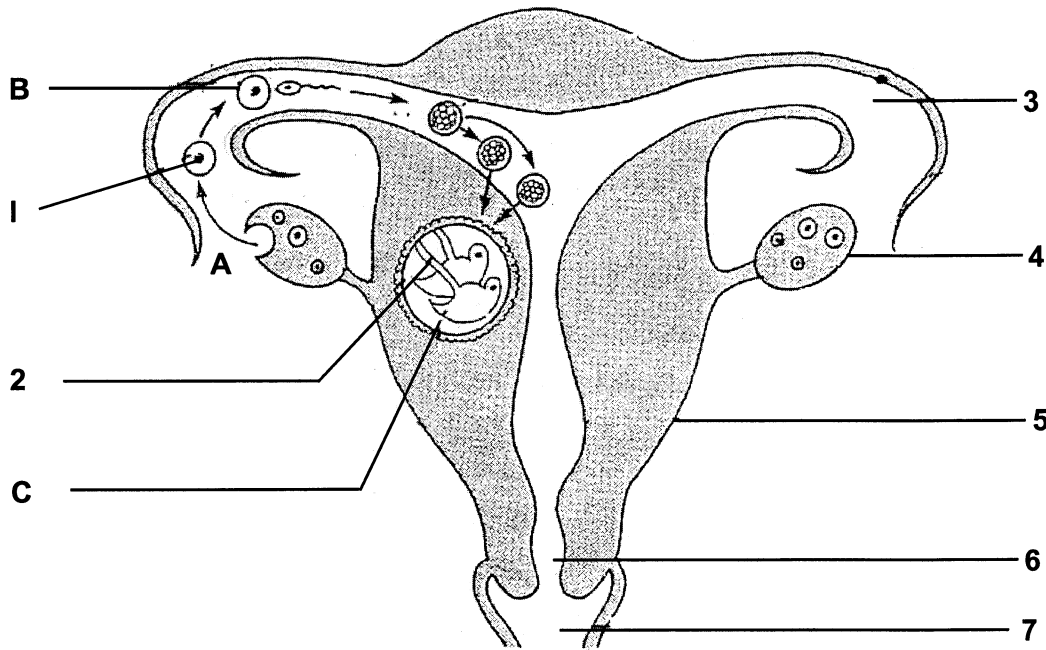


Fig 6.2: Female reproductive system

- 6.2.1 Name structures 1 to 7. (7)
- 6.2.2 Which process occurs at **A** in the diagram? (2)
- 6.2.3 Fertilization takes place at **B**.
- (a) What is the product of fertilization called? (1)
 - (b) What is the developing structure **C** referred to in the first eight weeks of pregnancy? (1)
 - (c) What is the developing structure **C** referred to after the first eight weeks of pregnancy? (1)
- 6.2.4 What will the result of this multiple pregnancy be? (2)
- 6.2.5 Name the hormones that are responsible for the following:
- (a) Secondary female characteristics
 - (b) Contraction of the uterus during parturition
 - (c) Production of milk in the milk glands
 - (d) The release and flow of milk during lactation
 - (e) The development of a new Graafian follicle (5)
- 6.2.6 Write down the name of the structure that protects the embryo against the following:
- (a) Bacterial infection from outside
 - (b) Bacteria of the mother (2)

- 6.2.7 Bespreek VIER funksies van die amnionvloeistof. (4)
 - 6.2.8 Teken 'n netjies benoemde skets van 'n sperm. (5)
- [50]

VRAAG 7

7.1 Die mens neem die veranderinge in sy omgewing waar deur middel van reseptore. Voltooi die onderstaande tabel ten opsigte van stimuli en reseptore. Skryf slegs die nommers onder mekaar in jou **antwoordboek** en die antwoord daarnaas.

TABEL 7.1: INLICHTING IN VERBAND MET STIMULI EN RESEPTORE VAN DIE LIGGAAM		
STIMULUS	RESEPTOR	LIGGING VAN RESEPTOR
(7.1.1)	Tasliggaampie van Krause	Dermis van vel
Hitte	(7.1.2)	(7.1.3)
Pyn	(7.1.4)	(7.1.5)
Opgeloste stowwe in die speeksel	(7.1.6)	(7.1.7)
(7.1.8)	Keeltjies	Retina van oog
Dowwe lig	(7.1.9)	(7.1.10)

(10)

7.2 Bestudeer die volgende diagram van die lengte deursnit van die menslike brein.

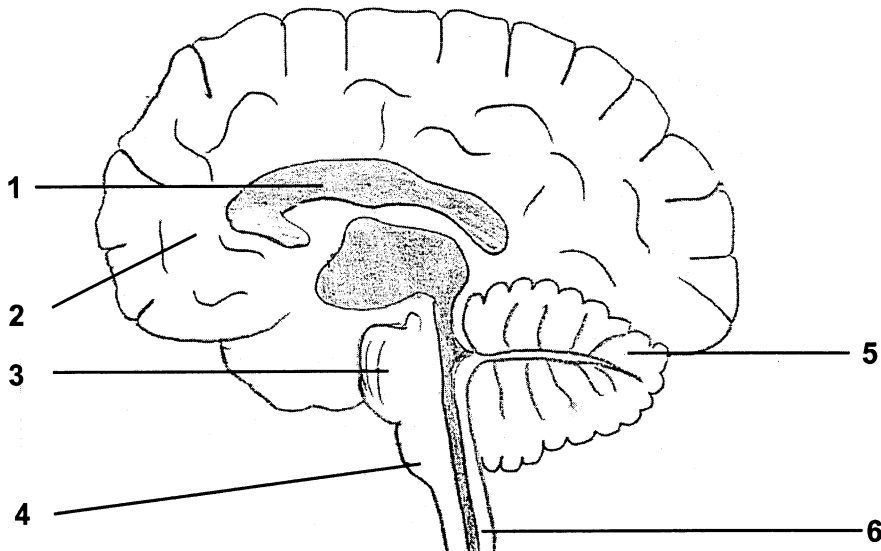


Fig. 7.2: Lengte deursnit van die menslike brein

- 7.2.1 Benoem strukture 2 tot 6 wat deel vorm van die sentrale senuweestelsel. (5)
- 7.2.2 Noem die VIER lobbe waarin struktuur nommer 2 verdeel kan word en bespreek EEN funksie van elke lob. (8)

b.o.

- 6.2.7 Discuss FOUR functions of the amniotic fluid. (4)
- 6.2.8 Draw a neatly labelled sketch of a sperm. (5)
- [50]

QUESTION 7

7.1 Humans are able to sense changes in their environment by means of receptors. Complete the following table concerning stimuli and receptors. Write only the numbers and correct answers in your **answer book**.

TABLE 7.1: INFORMATION REGARDING STIMULI AND RECEPTORS OF THE BODY		
STIMULUS	RECEPTOR	LOCATION OF RECEPTOR
(7.1.1)	End bulbs of Krause	Dermis of skin
Heat	(7.1.2)	(7.1.3)
Pain	(7.1.4)	(7.1.5)
Dissolved substances in saliva	(7.1.6)	(7.1.7)
(7.1.8)	Cones	Retina of the eye
Dim light	(7.1.9)	(7.1.10)

(10)

7.2 Study the following diagram of a longitudinal section through the human brain.

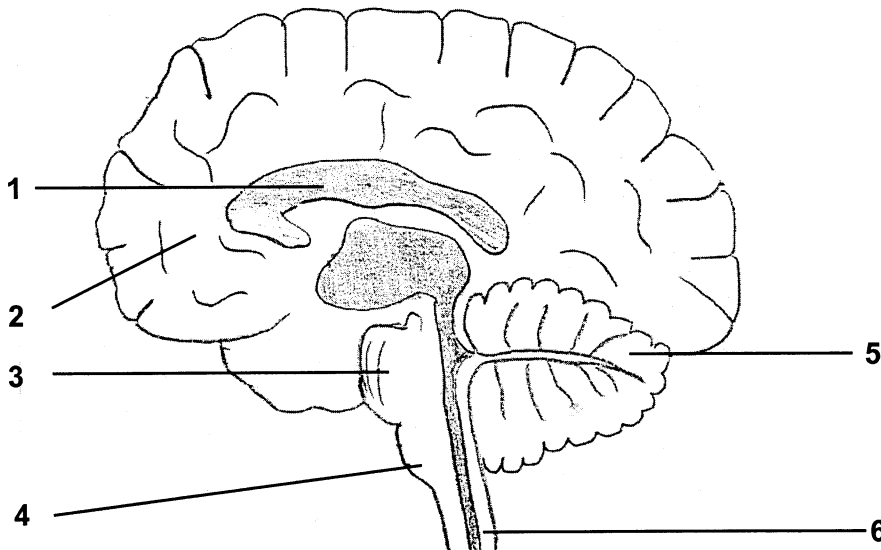


Fig 7.2: Longitudinal section of the human brain

- 7.2.1 Identify structures 2 to 6 that form part of the central nervous system. (5)
- 7.2.2 Name the FOUR lobes into which structure number 2 can be divided, and also discuss ONE function of each lobe. (8)

- 7.2.3 Noem die TWEE duidelikste groewe (sulki) wat aan die buitekant van die serebrum sigbaar is. (2)
- 7.2.4 Identifiseer struktuur no. 1 en sê wat sy funksie is. (2)
- 7.2.5 Bespreek die bou en funksie van struktuur no. 5 volledig. (10)
- 7.3 Die onderstaande diagram is 'n voorstelling van 'n refleksboog. (13)

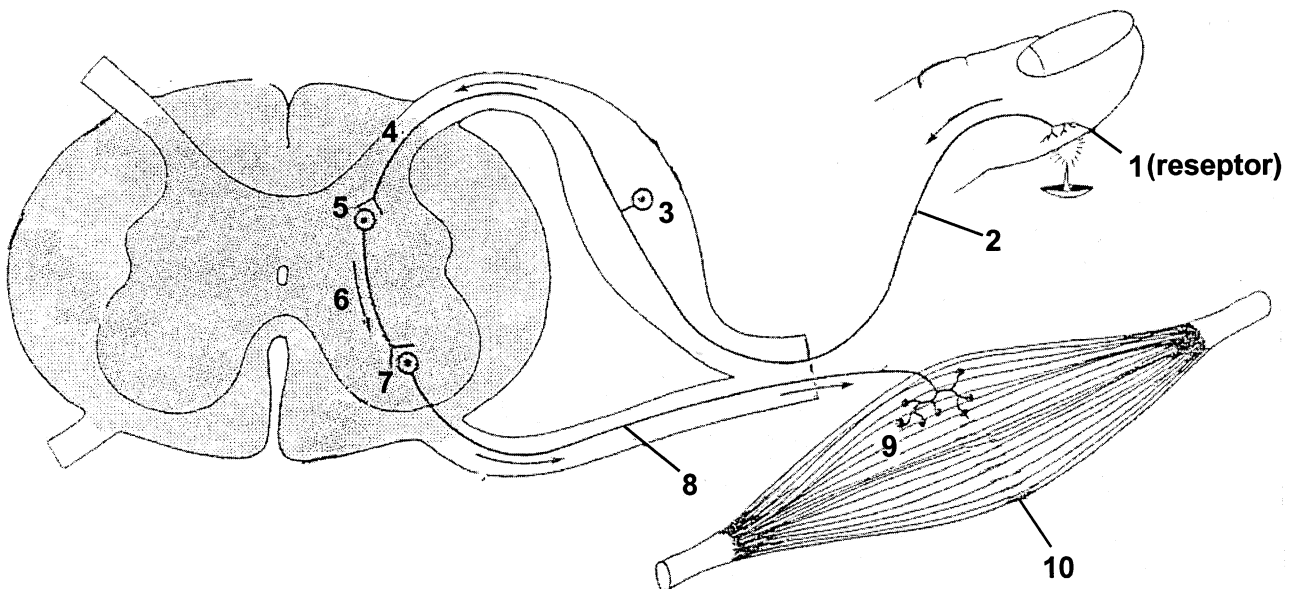


Fig 7.3: Refleksboogvoorstelling

'n Persoon steek sy/haar vinger met 'n duimspyker.
 Bespreek die pad wat die impuls sal volg vanaf die reseptor totdat die persoon sy/haar vinger gaan wegruk van die duimspyker.
 Gebruik die nommers as 'n riglyn.

(13)
 [50]

- 7.2.3 Name the TWO most prominent sulci visible on the outside of the cerebrum. (2)
- 7.2.4 Identify structure number 1 and mention its function. (2)
- 7.2.5 Discuss the structure as well as the functions of structure number 5 in detail. (10)

7.3 The diagram below represents a reflex arc.

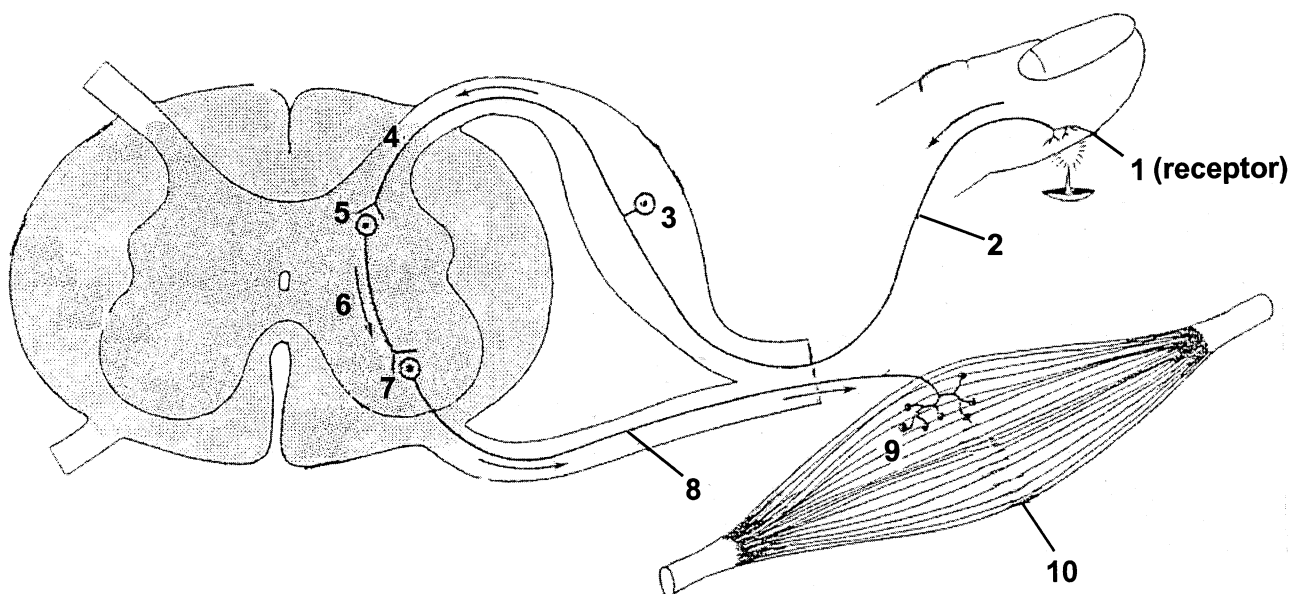


Fig 7.3: Reflex arc presentation

A person pricks his/her finger with a drawing-pin.
 Discuss the pathway an impulse will follow from the receptor until the person pulls his/her finger away from the drawing-pin.
 Use the numbers as a guide.

(13)
 [50]

VRAAG 8

- 8.1 Die onderstaande diagram verteenwoordig die menslike oor. Bestudeer die onderstaande diagram en beantwoord die daaropvolgende vrae.

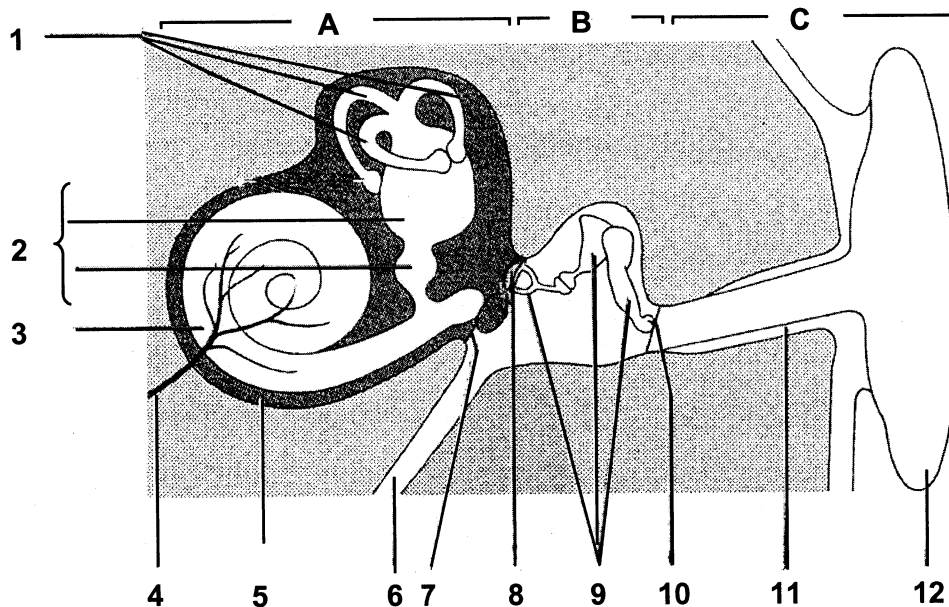


Fig 8.1: Dwarsnit van die menslike oor

- 8.1.1 Benoem die gedeeltes van die oor wat deur **A**, **B** en **C** verteenwoordig word. (3)
- 8.1.2 Beskryf die pad wat 'n klankgolf volg vandat dit deur die oorskulp (pinna) opgevang word, totdat dit by die koglea uitkom. (7)
- 8.1.3 Skryf neer watter deel van die oor die volgende funksies verrig. Skryf elke nommer op 'n nuwe lyn. Dui jou antwoord aan deur slegs die **NOMMER** in jou antwoordboek neer te skryf. (8)
- (a) Sit klankgolf om in vibrasies
 - (b) Verantwoordelik vir balans
 - (c) Verander klankvibrasies na 'n senuwee-impuls
 - (d) Hou die lugdruk aan albei kante van die trommelvlies konstant

QUESTION 8

- 8.1 The diagram below represents the human ear. Study the diagram, then answer the questions that follow.

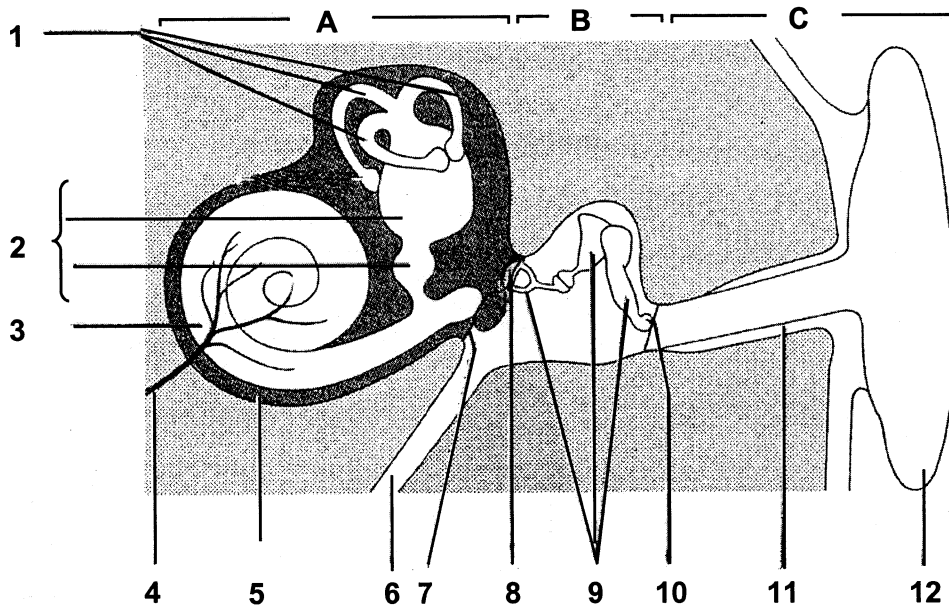
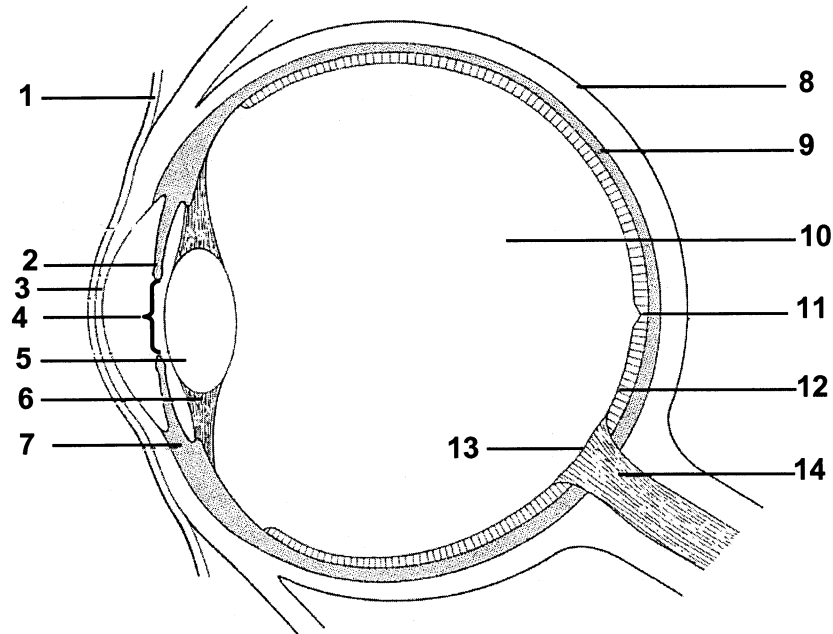


Fig 8.1: Cross-section of the human ear

- 8.1.1 Name the structures of the ear indicated by **A**, **B** and **C**. (3)
- 8.1.2 Describe the pathway of a sound wave from the time it is received by the pinna until it reaches the cochlea. (7)
- 8.1.3 Write the number of the part that performs the following function(s). Write each number on a new line. Indicate your answer by writing only the NUMBER in your answer book. (8)
- (a) Converts the sound wave into vibrations
 - (b) Is responsible for balance
 - (c) Converts the sound vibrations into an impulse
 - (d) Equalizes the air pressure on both sides of the tympanum

8.2 Bestudeer die onderstaande diagram van die menslike oog.



Figuur 8.2: Diagram van die menslike oog

- 8.2.1 Identifiseer strukture 1 tot 7. (7)
- 8.2.2 Bespreek die funksies van die lakrimaalvloeistof (trane) in die oog. (5)
- 8.2.3 Skryf slegs die nommer van die volgende strukture neer wat
- (a) geen keëltjies en stafies besit nie.
 - (b) die grootte van die pupil beheer.
 - (c) die gekleurde gedeelte van die oog verteenwoordig.
 - (d) baie bloedvate besit.
 - (e) 'n jellie-agtige vloeistof besit.
 - (f) as 'n swart kol in die oog van buite af vertoon.
 - (g) die deurskynende voorste gedeelte van die oog.
 - (h) die taai, wit, onelastiese laag van die oog. (8)

8.3 Beskryf hoe die sensasie van 'n **bitter** smaak waargeneem word. (6)

8.4 Noem DRIE soorte papille wat op die tong voorkom. (6)

[50]

8.2 Study the diagram below, representing the human eye.

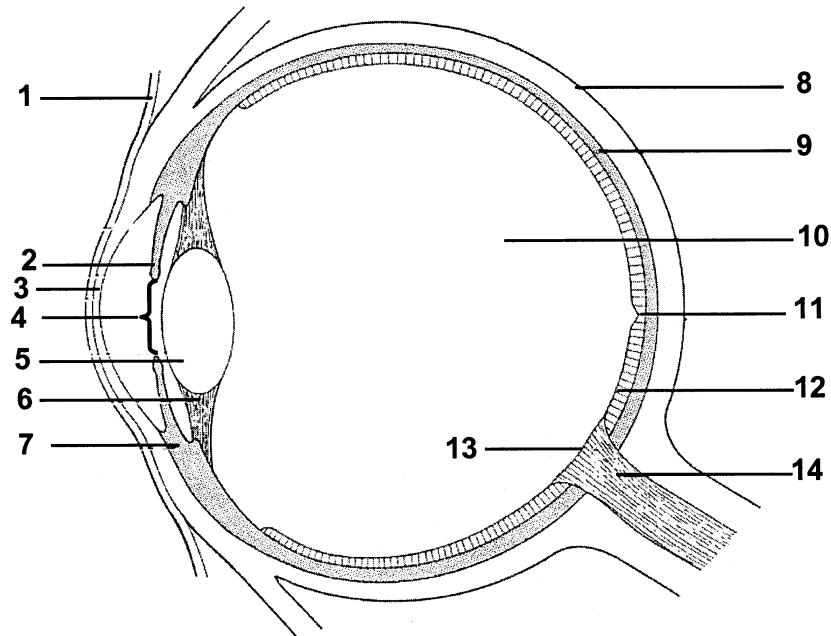


Figure 8.2: Diagram of the human eye

- 8.2.1 Identify structures 1 to 7. (7)
- 8.2.2 Discuss the functions of the lachrymal fluid (tears) in the eye. (5)
- 8.2.3 Write down only the number of the structure that
- (a) does not contain cones and rods.
 - (b) regulates the size of the pupil.
 - (c) represents the coloured part of the eye.
 - (d) is rich in blood vessels.
 - (e) contains a jelly-like fluid.
 - (f) appears as a black spot in the eye.
 - (g) forms the transparent part in the front of the eye.
 - (h) is the tough, white, inelastic layer of the eye. (8)
- 8.3 Describe how the sensation of a **bitter** taste is brought about. (6)
- 8.4 Name the THREE types of papillae that are situated on the tongue. (6)
- [50]

VRAAG 9

- 9.1 Die mens is homoiotermies, daarom bly sy liggaamstemperatuur konstant al verander die omgewing se temperatuur.
- 9.1.1 Wat is die mens se normale liggaamstemperatuur? (1)
- 9.1.2 Beskryf kortliks hoe die vel hitteverlies beperk deur die volgende prosesse:
- (a) Deur minder verdamping (3)
 - (b) Deur minder uitstraling (3)
 - (c) Deur isolasie (4)
- 9.2 9.2.1 Noem TWEE funksies van die hormoon tiroksien. (2)
- 9.2.2 Wat is die gebreksiekte wat veroorsaak word deur 'n onderafskeiding van tiroksien by
- (a) kinders? (1)
 - (b) volwassenes? (1)
- 9.2.3 Watter mikro-element is nodig vir tiroksienvorming? (2)
- 9.3 Bespreek die rol van die veg-of-vlughormoon, adrenalien op die liggaam. (8)
- 9.4 Maak 'n netjies benoemde diagram van die uitskeidingstelsel van die mens. (8)

QUESTION 9

- 9.1 Man is homoiothermic, thus the body temperature remains constant despite fluctuations in the environmental temperature.
- 9.1.1 What is normal body temperature? (1)
- 9.1.2 Describe how the skin limits heat loss through the following processes:
- (a) Through less evaporation (3)
 - (b) Through less convection (3)
 - (c) Through isolation (4)
- 9.2 9.2.1 Discuss TWO functions of the hormone thyroxin. (2)
- 9.2.2 What are the deficiency diseases caused by the hyposecretion of thyroxin in
- (a) children? (1)
 - (b) adults? (1)
- 9.2.3 Which micro-element is needed in the production of thyroxin? (2)
- 9.3 Discuss the effects of the fight or flight hormone, adrenalin, on the body. (8)
- 9.4 Draw a neatly labelled diagram of the urinary system of the human body. (8)

9.5 Bestudeer die diagram van die niernefron.

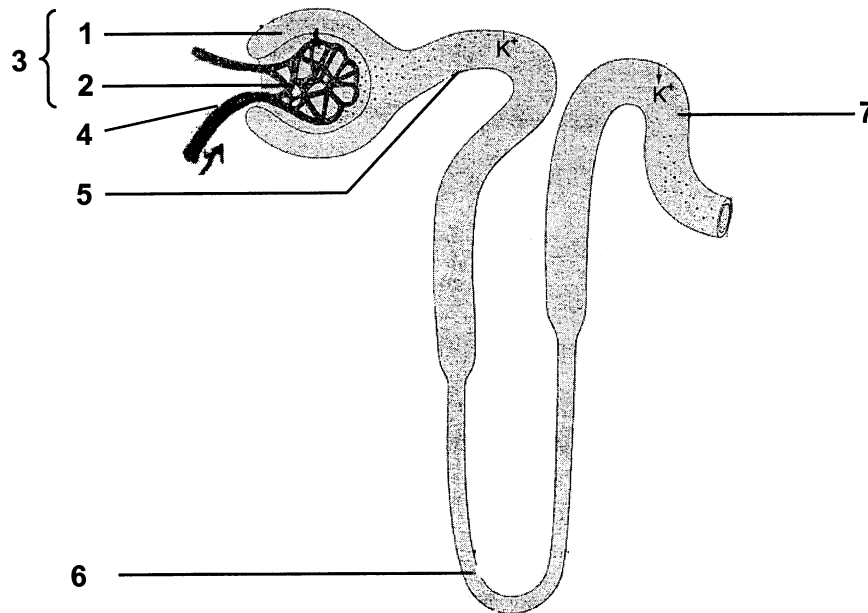


Fig 9.5: Diagram van 'n niernefron

9.5.1 Identifiseer strukture 1 tot 7. (7)

9.5.2 Skryf **slegs die nommer** van die struktuur neer waar die volgende plaasvind:

- (a) Ultrafiltrasie.
- (b) Glukose geherabsorbeer word.
- (c) Die natriumpomp geleë is.
- (d) Bloedselle en bloedproteïene agterbly.
- (e) Die meeste water geherabsorbeer word. (5)

9.5.3 Noem VYF stowwe wat in urine voorkom. (5)
[50]

TOTAAL VIR AFDELING B: [200]

TOTAAL: 300

9.5 Study the following diagram of the nephron.

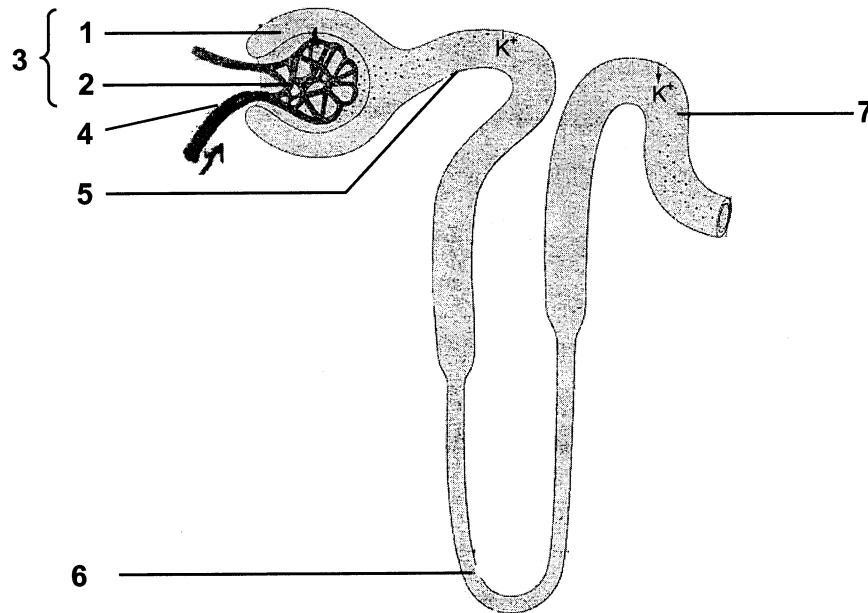


Fig 9.5: Diagram of a nephron in the kidney

9.5.1 Identify structures 1 to 7. (7)

9.5.2 Write down **only the number** of the structure where

- (a) Ultrafiltration takes place.
- (b) Absorption of glucose takes place.
- (c) The sodium pump is situated.
- (d) The blood cells and proteins remain.
- (e) Most of the water is reabsorbed. (5)

9.5.3 Name FIVE substances present in urine. (5)
[50]

TOTAL FOR SECTION B: [200]

TOTAL: 300