



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NASIONALE
SENIOR SERTIFIKAAT**

GRAAD 12

(LFSC.2)

LEWENSWETENSKAPPE V2

FEBRUARIE/MAART 2014

PUNTE: 150

TYD: 2½ uur

Hierdie vraestel bestaan uit 15 bladsye.

OGGENDSESSIE



INSTRUKSIES EN INLIGTING

Lees die volgende instruksies aandagtig deur voordat die vrae beantwoord word.

1. Beantwoord AL die vrae.
2. Skryf AL die antwoorde in die ANTWOORDEBOEK.
3. Begin die antwoorde op ELKE vraag boaan 'n NUWE bladsy.
4. Nommer die antwoorde korrek volgens die nommeringstelsel wat in hierdie vraestel gebruik word.
5. Bied jou antwoorde volgens die instruksies by elke vraag aan.
6. Maak ALLE tekeninge met 'n potlood en die byskrifte met blou of swart ink.
7. Teken diagramme en vloedigramme slegs wanneer dit gevra word.
8. Die diagramme in hierdie vraestel is NIE noodwendig volgens skaal geteken NIE.
9. MOENIE grafiekpapier gebruik NIE.
10. Jy moet 'n nieprogrammeerbare sakrekenaar, 'n gradeboog en 'n passer gebruik, waar nodig.
11. Skryf netjies en leesbaar.

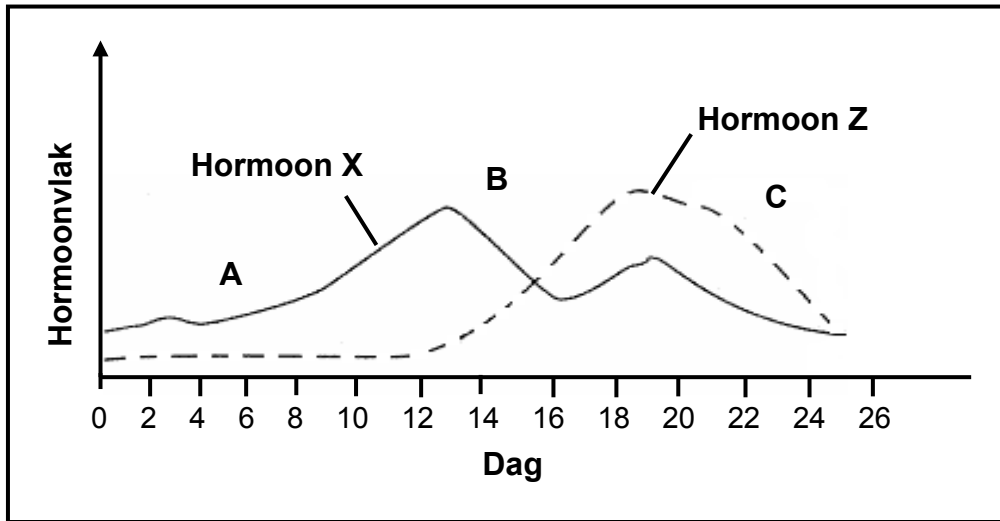


AFDELING A**VRAAG 1**

- 1.1 Verskeie opsies word as moontlike antwoorde vir die volgende vrae gegee. Kies die korrekte antwoord en skryf slegs die letter (A tot D) langs die vraagnommer (1.1.1 tot 1.1.10) in die ANTWOORDEBOEK neer, byvoorbeeld 1.1.11 D.
- 1.1.1 Watter van die volgende is 'n voorbeeld van parasitisme?
- A Bye wat 'n blom besoek
 - B 'n Voël nes in 'n boom
 - C 'n Spinnepkop wat 'n insek eet
 - D Bosluise op 'n hond
- 1.1.2 Watter EEN van die volgende stellings oor die verwantskap tussen 'n predator en sy prooi is WAAR?
- A Daar heers interspesifieke mededinging.
 - B Die grootte van die predatorbevolking word deur die grootte van die prooibevolking beheer.
 - C 'n Toename in die getal predatore lei tot 'n toename in die getal prooi.
 - D 'n Afname in die getal predatore lei tot 'n afname in die getal prooi.
- 1.1.3 Watter deel hieronder vorm deel van die plasenta?
- A Amnion
 - B Chorion
 - C Fallopiusbuis
 - D Serviks
- 1.1.4 Beskermings-/Verdedigingsmeganismes wat plante teen insekte het, sluit die ... in.
- A selwande van sellulose
 - B vervaardiging van giftige chemikalieë
 - C aanwesigheid van 'n inwendige vaatstelsel
 - D vermoë van stomata om gedurende die dag en die nag te sluit
- 1.1.5 Om 'n stabiele bevolking te handhaaf in 'n gebied waar emigrasie en immigrasie nie plaasvind nie, moet ...
- A voedselvoorsiening beperk word.
 - B predatore ingebring word.
 - C die nataliteitskoers laer as die mortaliteitskoers wees.
 - D die mortaliteitskoers dieselfde as die nataliteitskoers wees.



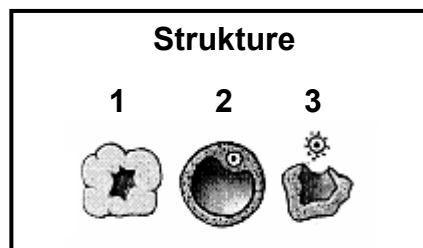
VRAAG 1.1.6 EN 1.1.7 IS OP DIE GRAFIEK HIERONDER GEBASEER.



1.1.6 Indien bevrugting sou plaasvind, sal die vlak van hormoon **Z** vanaf dag 18 ...

- A afneem soos op die grafiek aangedui.
- B eers afneem en dan toeneem.
- C nie afneem nie.
- D dieselfde patroon as hormoon **X** volg, soos in die grafiek aangedui.

1.1.7 Struktuur **1**, **2** en **3** hieronder toon verskillende stadiums in die ontwikkeling van die follikel gedurende die menstruele siklus.



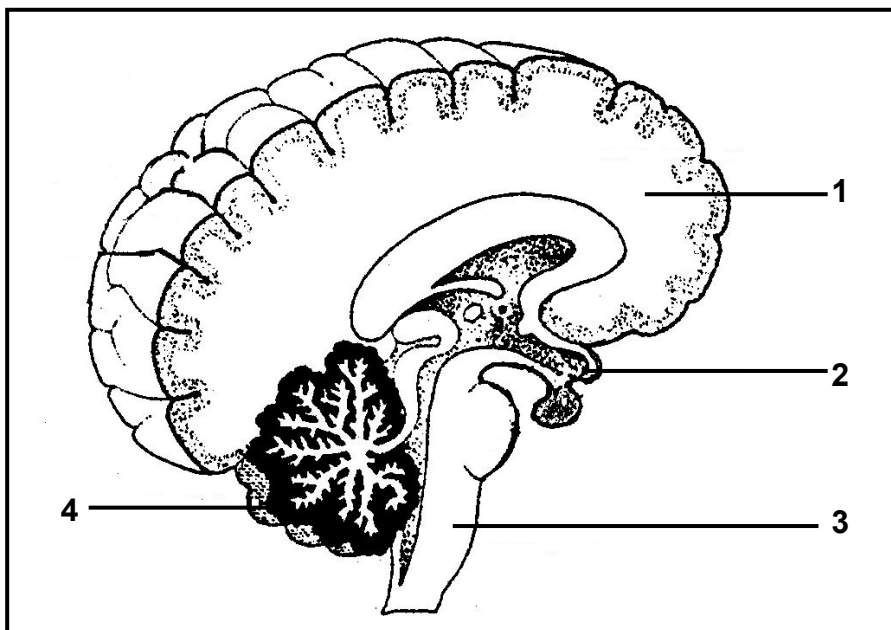
Die volgorde van die strukture wat met **A**, **B** en **C** op die grafiek hierbo ooreenstem, is ...

- A 1, 2, 3.
- B 2, 3, 1.
- C 2, 1, 3.
- D 3, 2, 1.

- 1.1.8 Watter EEN van die volgende groep toestande sal heel waarskynlik 'n groot toename in die grootte van die prooibevolking tot gevolg hê?

	PREDASIE	VOEDSELVOORSIENING	SIEKTE
A	Afname	Toename	Afname
B	Toename	Toename	Afname
C	Afname	Afname	Toename
D	Toename	Afname	Toename

VRAAG 1.1.9 EN 1.1.10 IS OP DIE DIAGRAM HIERONDER GEBASEER.



- 1.1.9 Watter kombinasie byskrifte vir 2, 3 en 4 onderskeidelik is KORREK?

- A Hipotalamus, serebrum, serebellum
- B Serebrum, serebellum, hipotalamus
- C Hipotalamus, medulla oblongata, serebellum
- D Medulla oblongata, serebrum, serebellum

- 1.1.10 Wat is die funksie van die deel wat 1 genommer is?

- A Verantwoordelik vir spiertonus
- B Verantwoordelik vir alle willekeurige spierbewegings
- C Beheer belangrike refleksaksies
- D Beheer die tempo van die hartklop

(10 x 2) (20)



1.2 Gee die korrekte **biologiese term** vir elk van die volgende beskrywings. Skryf slegs die term langs die vraagnommer (1.2.1 tot 1.2.6) in die ANTWOORDEBOEK neer.

- 1.2.1 Die handhawing van 'n konstante interne omgewing in lewendige organismes
- 1.2.2 Die oordrag van 'n stuifmeelkorrel van 'n helmknop na 'n stempel
- 1.2.3 Die produsering van 'n nageslag uit 'n enkele plant sonder dat gamete versmelt het
- 1.2.4 Versperrings wat voorkom dat lede van twee spesies 'n nageslag produseer
- 1.2.5 Die ontwikkeling van die volwasse vorm uit 'n bevrugte eiersel sonder dat 'n larwestadium voorkom, by sommige insekte
- 1.2.6 Neurone wat impulse vanaf reseptore vervoer

(6)

1.3 Dui aan of elk van die stellings in KOLOM I van toepassing is op **SLEGS A**, **SLEGS B**, **BEIDE A EN B** OF **GEENEEN** van die items in KOLOM II nie. Skryf **slegs A**, **slegs B**, **beide A en B** of **geeneen** langs die vraagnommer (1.3.1 tot 1.3.8) in die ANTWOORDEBOEK neer.

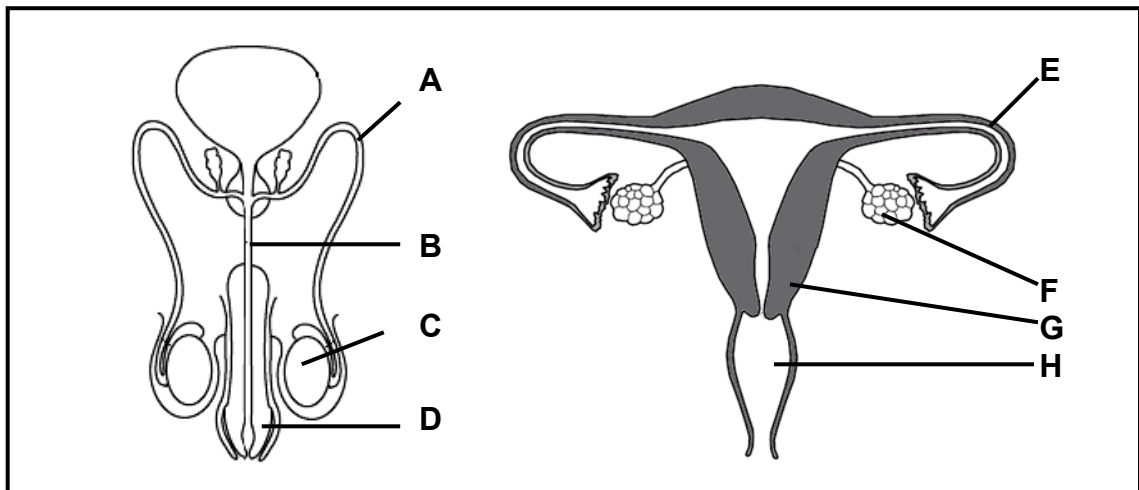
KOLOM I	KOLOM II
1.3.1 'n Verwantskap waar beide organismes uit die verwantskap voordeel trek	A: Kommensalisme B: Mutualisme
1.3.2 Verbruikers in 'n voedselketting	A: Herbivore B: Omnivore
1.3.3 Die gebruik van dieselfde hulpbrondeur twee spesies, maar op verskillende maniere	A: (Hulp)bronverdeling B: Mededingende uitsluiting
1.3.4 Besetting van 'n habitat wat voorheen onbeset was	A: Primêre suksessie B: Sekondêre suksessie
1.3.5 Die deel van die senuweestelsel wat die aktiwiteit van die inwendige organe, soos die hart, beheer	A: Simpatiese B: Parasimpatiese
1.3.6 Plek waar klankprikkel in senuwee-impulse omgeskakel word	A: Halfsirkelvormige kanale B: Ovale venster
1.3.7 Belangrikheid van saad	A: Bevat voedsel vir die embrio B: Beskerm die embrio
1.3.8 Die struktuur wat uit 'n vrugbeginsel ontwikkel	A: Saad B: Vrug

(8 x 2)

(16)



- 1.4 Die diagramme hieronder toon die manlike en vroulike voortplantingstelsel van die mens.



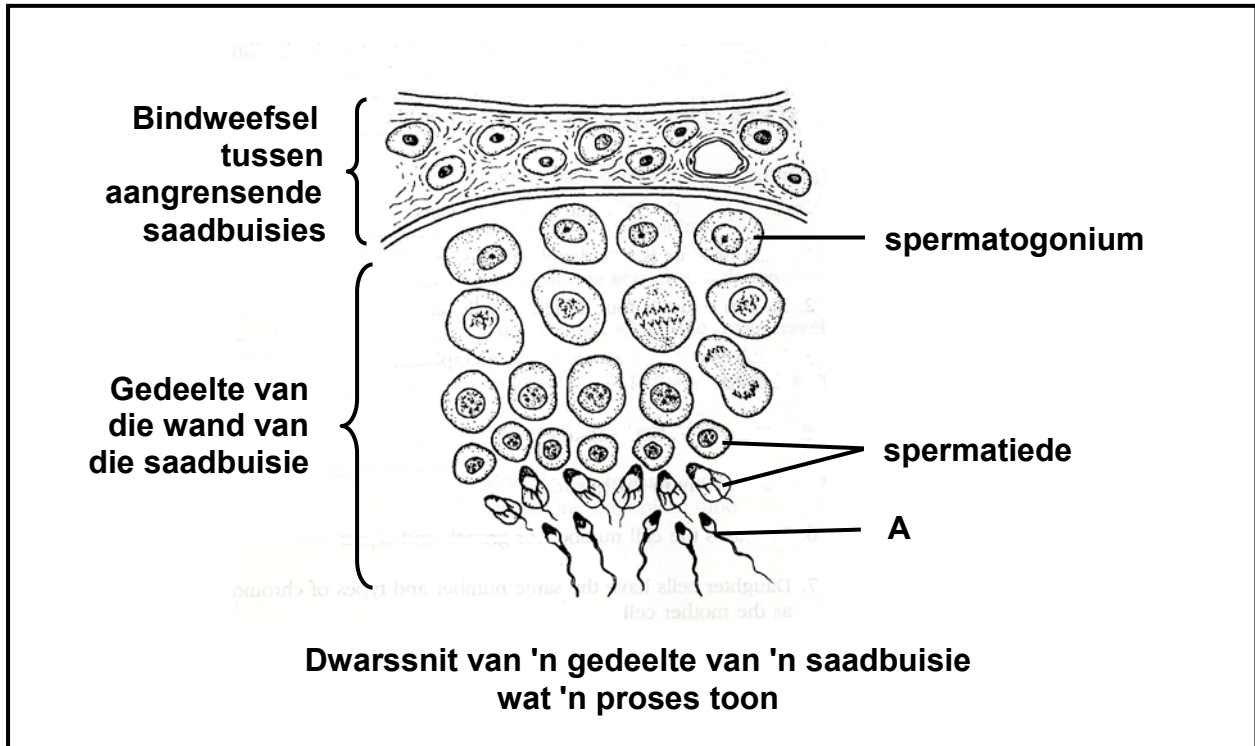
Skryf die LETTER (A–H) neer en BENOEM die deel:

- | | | |
|-------|--|------------|
| 1.4.1 | Wat urine na buite die liggaam vervoer | (2) |
| 1.4.2 | Waar bevrugting plaasvind | (2) |
| 1.4.3 | Waar sperms geproduseer word | (2) |
| 1.4.4 | Waar ovums geproduseer word | (2) |
| | | (8) |

TOTAAL AFDELING A: 50

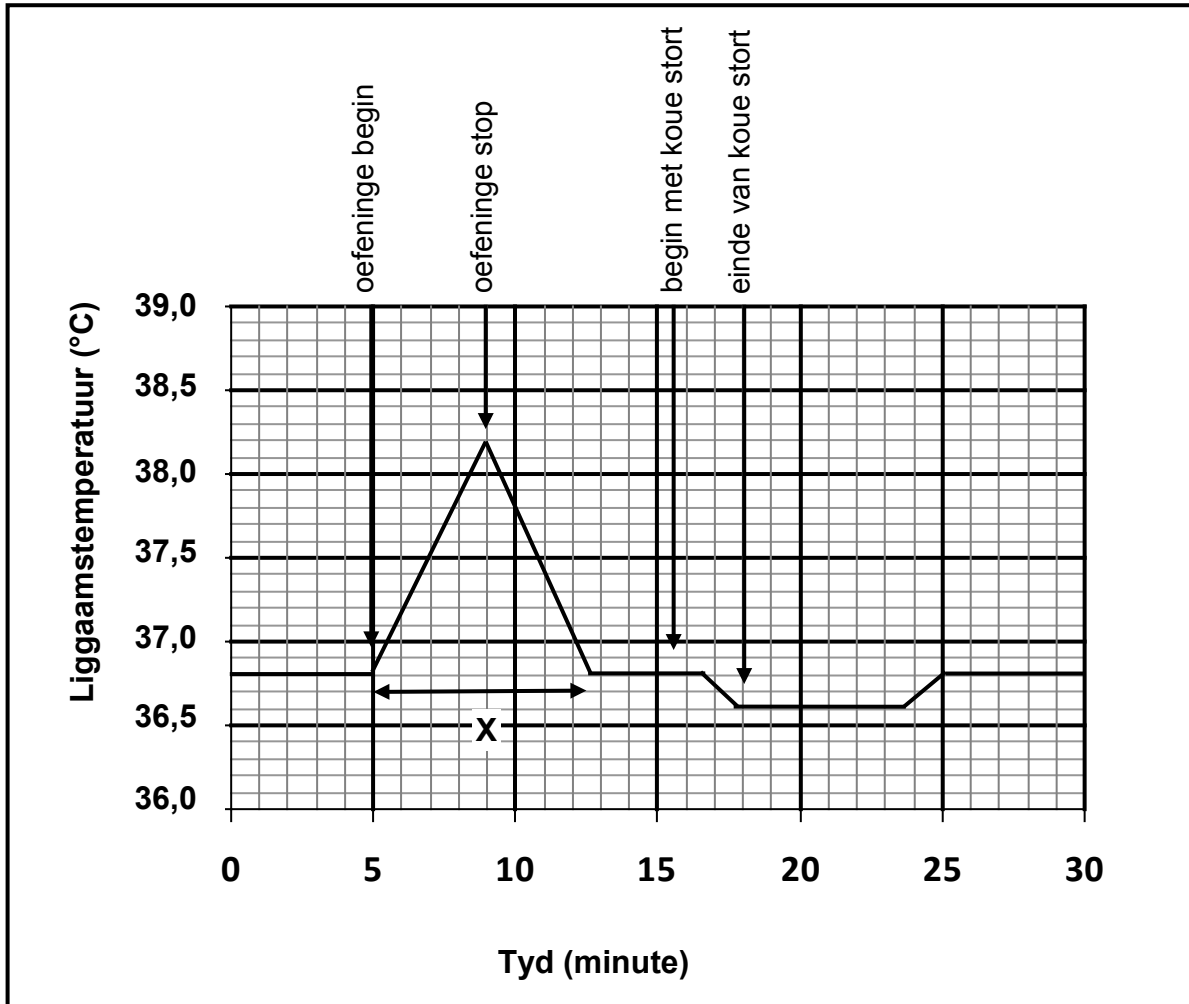
AFDELING B**VRAAG 2**

- 2.1 Die diagram hieronder verteenwoordig 'n dwarsnit deur 'n mens se saadbuisie/seminale tubule waarin 'n proses besig is om plaas te vind.



- 2.1.1 Noem die spesifieke proses wat in die saadbuisie geïllustreer word en tot die vorming van struktuur **A** lei. (1)
- 2.1.2 Noem die hormoon wat deur die orgaan wat die saadbuisies bevat, geproduseer is. (1)
- 2.1.3 Noem EEN funksie van die hormoon wat in VRAAG 2.1.2 genoem word. (1)
- 2.1.4 Hoeveel chromosome is daar in elke:
- (a) Spermatogoniumsel (1)
- (b) Spermatied (1)
- 2.1.5 Maak 'n benoemde tekening om die bou van die sel wat **A** gemerk is, aan te toon. (5)
- (10)**

2.2 Die grafiek hieronder toon die veranderinge in 'n persoon se liggaamstemperatuur oor 'n periode van 30 minute.

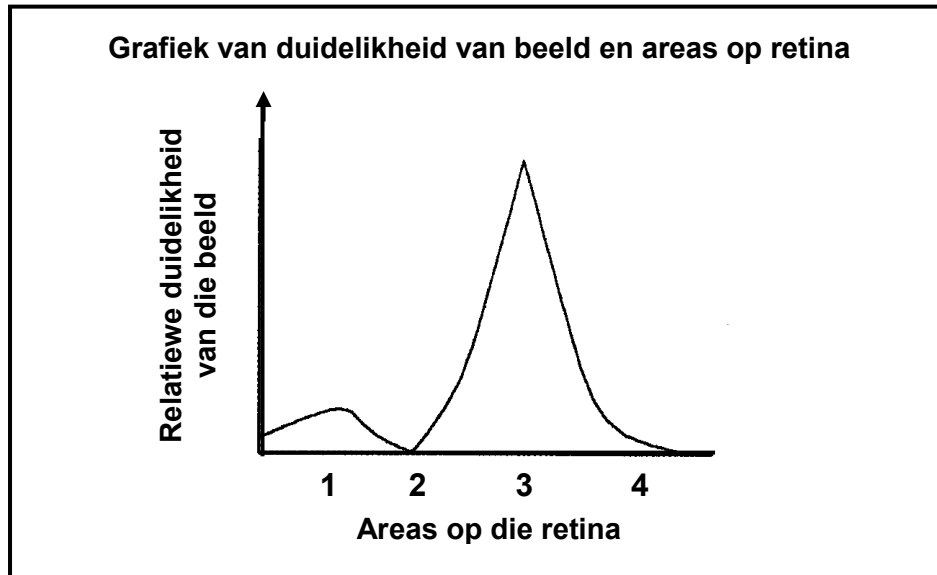
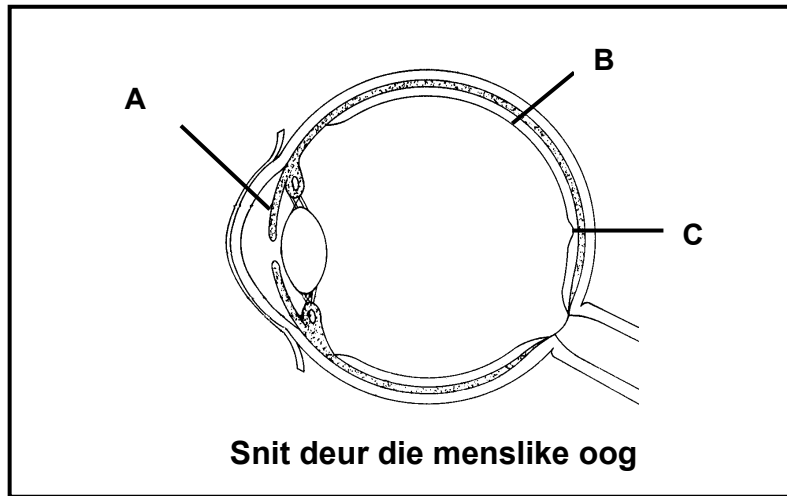


[Aangepas uit *Biology 2*, Cambridge, 2007]

- 2.2.1 Met hoeveel °C het die temperatuur tydens hierdie periode van 30 minute verander? (2)
- 2.2.2 Verklaar die veranderinge in die liggaamstemperatuur tydens periode X. (8)
(10)



2.3 Bestudeer die diagram en die grafiek hieronder en beantwoord die vrae wat volg.



- 2.3.1 Verduidelik EEN manier waarop deel **B** geskik is om sy funksie te verrig. (2)
- 2.3.2 Verduidelik hoe en waarom deel **A** aanpassings maak wanneer 'n persoon uit skerp lig by 'n donker vertrek inkom. (5)
- 2.3.3 Watter NOMMER (1–4) op die grafiek verteenwoordig **C** in die diagram? (1)
- 2.3.4 Gee 'n rede vir jou antwoord op VRAAG 2.3.3. (1)
- 2.3.5 Noem die deel van **B** in die diagram wat ooreenstem met nommer **2** op die grafiek. (1)

(10)
[30]



VRAAG 3

- 3.1 Die volgende tabel toon die veranderinge in die bevolkingsgrootte van 'n soort insek oor 'n tydperk van 14 weke.

Tyd (weke)	Bevolkingsgrootte
0	200
2	500
4	3 200
6	7 800
8	11 400
10	12 200
12	12 200
14	12 200

- 3.1.1 Trek 'n lyngrafiek met gebruik van die inligting in die tabel hierbo. (6)
- 3.1.2 Op jou grafiek, benoem die verskillende groeifases wat uitgebeeld word. (3)
- 3.1.3 Hoe verskil die groeipatroon in die grafiek wat jy geteken het van 'n geometriese groeivorm? (1)
(10)
- 3.2 'n Ondersoek is uitgevoer om meer uit te vind oor mededinging tussen ertjieplante. Vyf groepe ertjieplante is in dieselfde grond in areas van een vierkante meter (1 m^2) elk, onder dieselfde omgewingstoestande laat groei.

Die resultate word in die tabel hieronder getoon.

Groep	Getal plante per area van 1 m^2	Gemiddelde getal peule per plant	Gemiddelde getal sade per peul
1	20	8,3	6,0
2	40	6,8	5,9
3	60	3,9	6,2
4	80	2,7	5,9
5	100	2,1	6,0

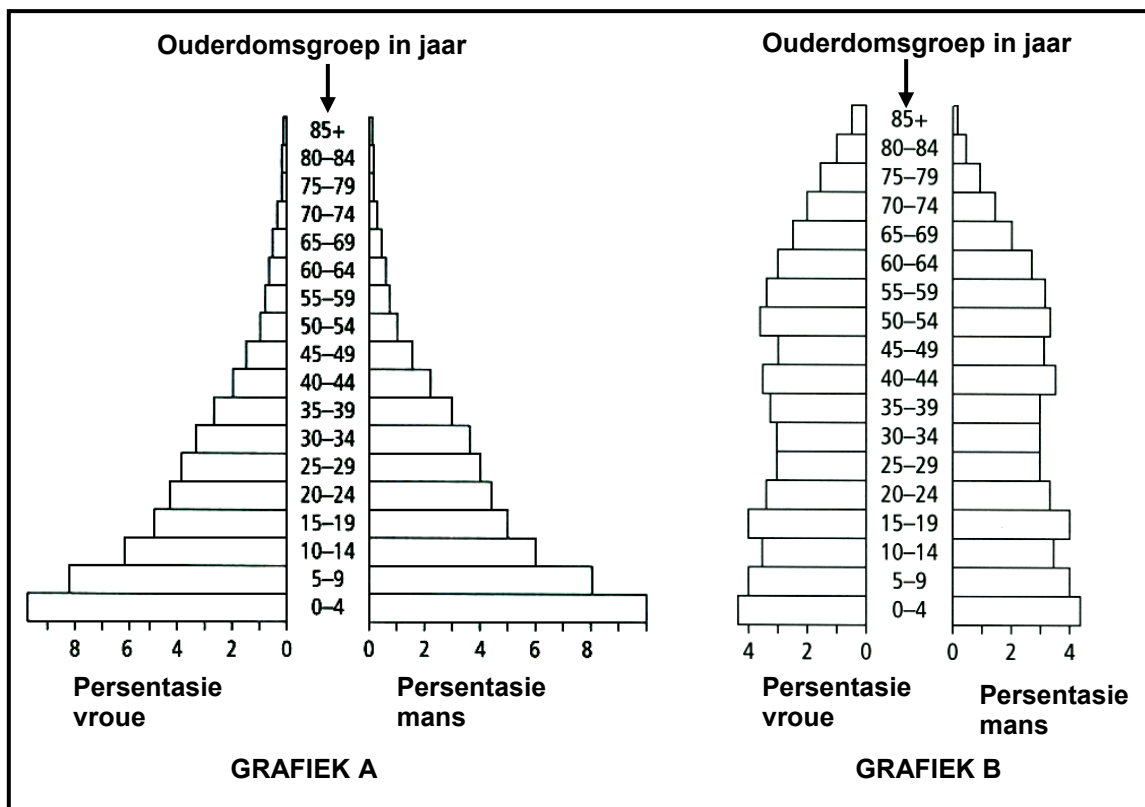
- 3.2.1 Identifiseer TWEE afhanklike veranderlikes vir die ondersoek hierbo. (2)
- 3.2.2 Watter veranderlike in die tabel word klaarblyklik die meeste deur mededinging tussen naburige plante beïnvloed? (1)
- 3.2.3 Noem EEN manier waarop die veranderlike in VRAAG 3.2.2 beïnvloed is namate die digtheid van plante in 'n 1 m^2 -area toegeneem het. (1)
- 3.2.4 Noem TWEE hulpbronne waarvoor die ertjieplante in hierdie ondersoek moontlik kon meeding het. (2)



- 3.2.5 Bereken die totale getal sade wat geproduseer is in die area waar 20 plante in 'n 1 m²-area gegroei het. Toon AL jou bewerkings. (2)
- 3.2.6 Watter groep (1 of 5) het 'n groter opbrengs saad per plant gelewer? (1)
- 3.2.7 Verduidelik jou antwoord op VRAAG 3.2.6. (2)
- 3.2.8 Behalwe die omgewingstoestande, noem TWEE ander faktore wat konstant gehou moes word om te verseker dat die resultate wat verkry word, geldig sou wees. (2)

(13)

3.3 Die diagramme hieronder verteenwoordig grafieke van ouderdom- en geslagsverspreiding vir 'n ontwikkelde land en 'n ontwikkelende land.



- 3.3.1 Verduidelik die waarde van die inligting wat deur die grafieke hierbo verskaf word wanneer daar vir onderwys beplan word. (2)
- 3.3.2 Noem TWEE uitwerkings wat 'n hoë bevolkingsgroei op die omgewing het. (2)
- 3.3.3 Watter grafiek (A of B) verteenwoordig die bevolkingsverspreiding van 'n ontwikkelende land? (1)
- 3.3.4 Gee TWEE redes vir jou antwoord op VRAAG 3.3.3. (2)

(7)

[30]

TOTAAL AFDELING B: 60



AFDELING C**VRAAG 4**

4.1 Lees die leesstuk hieronder en beantwoord die vrae wat volg.

DIE LOT VAN CHINA

Die Chinese regering het in 1978 besluit dat dit nodig was om sy invloed te gebruik om die bevolkingsgroeikoers te laat afneem om te verseker dat alle mense genoeg voedsel en 'n aanvaarbare lewensgehalte sou hê. Die bevolkingsgroeikoers in 1971 was 2,3%. Die regering se doelwit was om dit tot 0% teen die jaar 2000 te laat afneem. Teen 1986 was dit 1%.

'n Een-kind-beleid is ingestel, waarvolgens paartjies wat een kind het met 'n goeie werk, goeie behuising, 'n bonus van 'n ekstra maand se salaris, sowel as gratis onderwys en mediese sorg vir die kind, beloon is.

[Aangepas uit *Integrated Science, Systems and Diversity*, 1995]

- 4.1.1 Noem 'n metode wat gebruik word om die grootte van die menslike bevolking te bepaal. (1)
- 4.1.2 Uit die leesstuk hierbo, gee TWEE redes waarom die Chinese regering besluit het dat dit nodig was om die bevolkingsgroeikoers te laat afneem. (2)
- 4.1.3 Verduidelik hoe die een-kind-beleid die bevolkingsgrootte oor baie generasies heen kan beïnvloed. (2)
- 4.1.4 In 'n land waar die geboorte van 'n seun hoër geag word as die geboorte van 'n dogter, verduidelik hoe die een-kind-beleid die geslagsamestelling van die bevolking kan beïnvloed. (2)
(7)

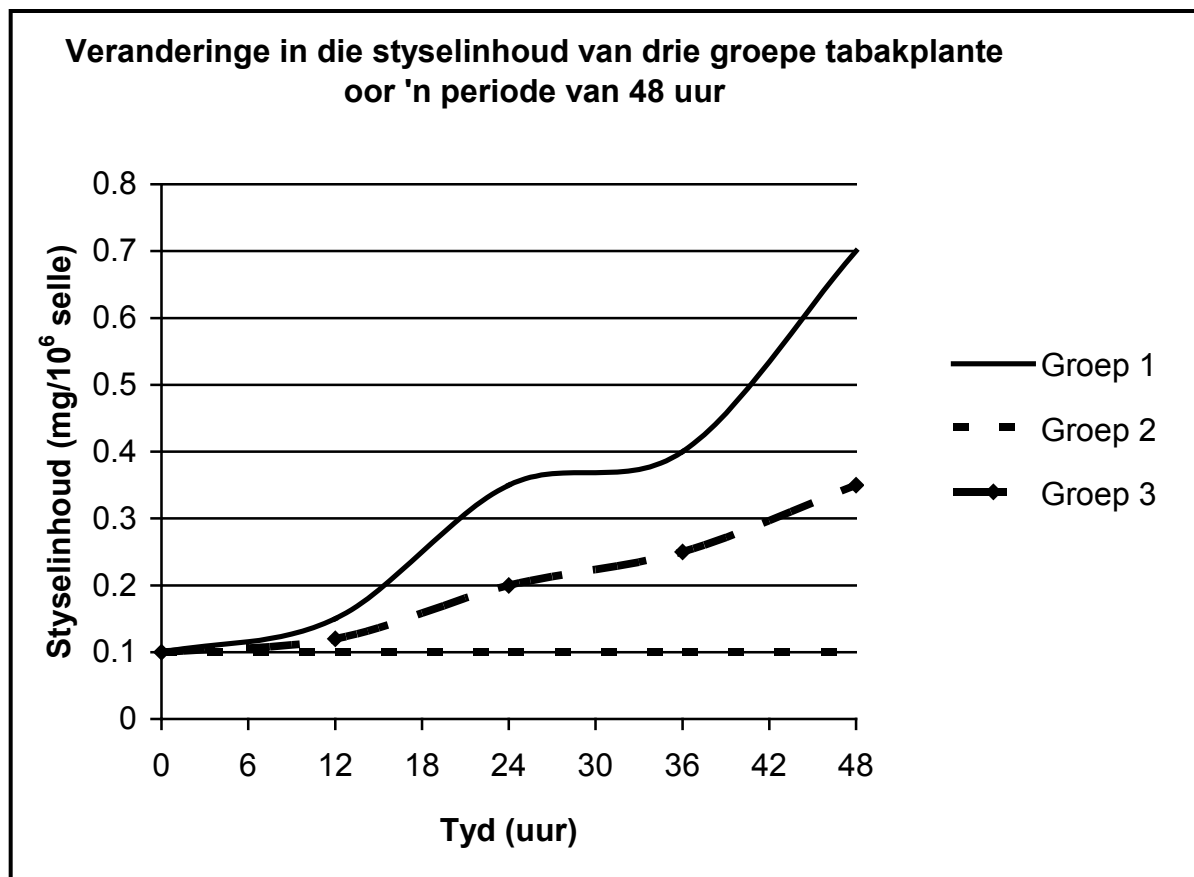


4.2 'n Onderzoek is uitgevoer om die invloed van twee planthormone (**A** en **B**) op die opeenhoping van stysel in die selle van tabakplante te bepaal.

Die ondersoek is soos volg opgestel:

- 30 tabakplante van dieselfde spesie, grootte en ouderdom is gebruik.
- Hulle is in 3 groepe ingedeel, en elkeen is op 'n ander manier soos volg behandel:
 - Groep 1: 10 plante is met hormoon A behandel
 - Groep 2: 10 plante is met hormoon B behandel
 - Groep 3: 10 plante het geen hormoonbehandeling ontvang nie
- Al die plante is toe onder dieselfde toestande gelaat en die styselinhoud in die selle van elke groep is na 6 uur gemeet.

Die grafiek hieronder toon die resultate van die behandelings vir 'n periode van 48 uur aan.



4.2.1 Verduidelik die doel van Groep 3 in hierdie ondersoek. (2)

4.2.2 Deur die resultate te gebruik, dui die funksie aan van:

(a) Planthormoon A (2)

(b) Planthormoon B (2)

(6)

4.3 Die Colorado-kewer is 'n plaag omdat dit aartappels op die land vreet. Tydens 'n ondersoek is 'n kewerbevolking in 'n 2 000 m²-aartappelland geskat, soos hieronder beskryf:

- 'n Monster van die kewers is versamel en getel.
- Elke kewer is met 'n kolletjie verf gemerk en toe weer op die land vrygelaat.
- Drie dae later is 'n tweede monster versamel en getel.
- Die getal gemerkte kewers in die tweede monster is aangeteken.

Die resultate word in die tabel hieronder aangetoon.

Getal kewers wat gemerk en vrygelaat is	Getal kewers in die tweede monster	Getal gemerkte kewers in die tweede monster
500	450	5

Die kewerbevolking kan geskat word deur die volgende formule te gebruik:

$$P = \frac{M \times C}{R}$$

P = geskatte bevolking

M = getal kewers wat gevang en gemerk is

C = getal kewers wat weer gevang is

R = getal gemerkte kewers in die tweede vang

4.3.1 Bereken die bevolkingsgrootte van die kewers in die aartappelland. Toon AL jou bewerkings. (3)

4.3.2 Dui aan of daar 'n ONDERSKATTING of 'n OORSKATTING van die grootte van die kewerbevolking onder die volgende toestande sal wees:

(a) Party van die kolletjies verf op die kewers het afgegaan voordat die tweede monster gevang is (2)

(b) Die tweede monster is op dieselfde plek gevang, kort nadat die eerste monster gevang is (2)
(7)
(20)

4.4 Noem en gee die funksies van VIER hormone wat deur die pituïetêre klier/hipofise by mense afgeskei word. Beskryf hoe die pituïetêre klier die funksie van die tiroïedklier deur negatiewe terugkoppeling beheer.

Inhoud: (17)
Sintese: (3)
(20)

LET WEL: GEEN punte sal toegeken word vir antwoorde in die vorm van vloeddiagramme of diagramme nie.

TOTAAL AFDELING C: 40
GROOTTOTAAL: 150



4.3

The Colorado Beetle is a pest because it feeds on potato crops. In an investigation, the population of beetles in a 2 000 m² potato field was estimated as described below:

- A sample of beetles from the field was collected and counted.
- Each beetle was marked with a spot of paint and then released back into the field.
- Three days later a second sample was collected and counted.
- The number of marked beetles in this second sample was noted.

The results are shown in the table below.

Number of beetles that were marked and released	500
Number of beetles in second sample	450
Number of marked beetles in second sample	5

The population of beetles can be estimated using the following formula:

$$P = \frac{M \times C}{R}$$

P = population estimate
 M = number of beetles captured and marked
 C = number of beetles recaptured
 R = number of marked beetles in the second capture

4.3.1 Calculate the population size of beetles in the field. Show ALL working. (3)

4.3.2 State whether the population size of the beetles will be UNDERESTIMATED or OVERESTIMATED under the following conditions: (2)

- (a) Some of the marks on the beetles wear off before the second sample is taken (2)
- (b) The second sample is taken from the same place as the first, shortly after the first sample was taken (7)

4.4

Name and state the functions of FOUR hormones secreted by the pituitary gland in humans. Describe how the pituitary gland controls the functioning of the thyroid gland using negative feedback. (17)

Content (3)

Synthesis (17)

NOTE: NO marks will be awarded for answers in the form of flow charts or diagrams.

(20)

(20)

TOTAL SECTION C: 40

GRAND TOTAL: 150



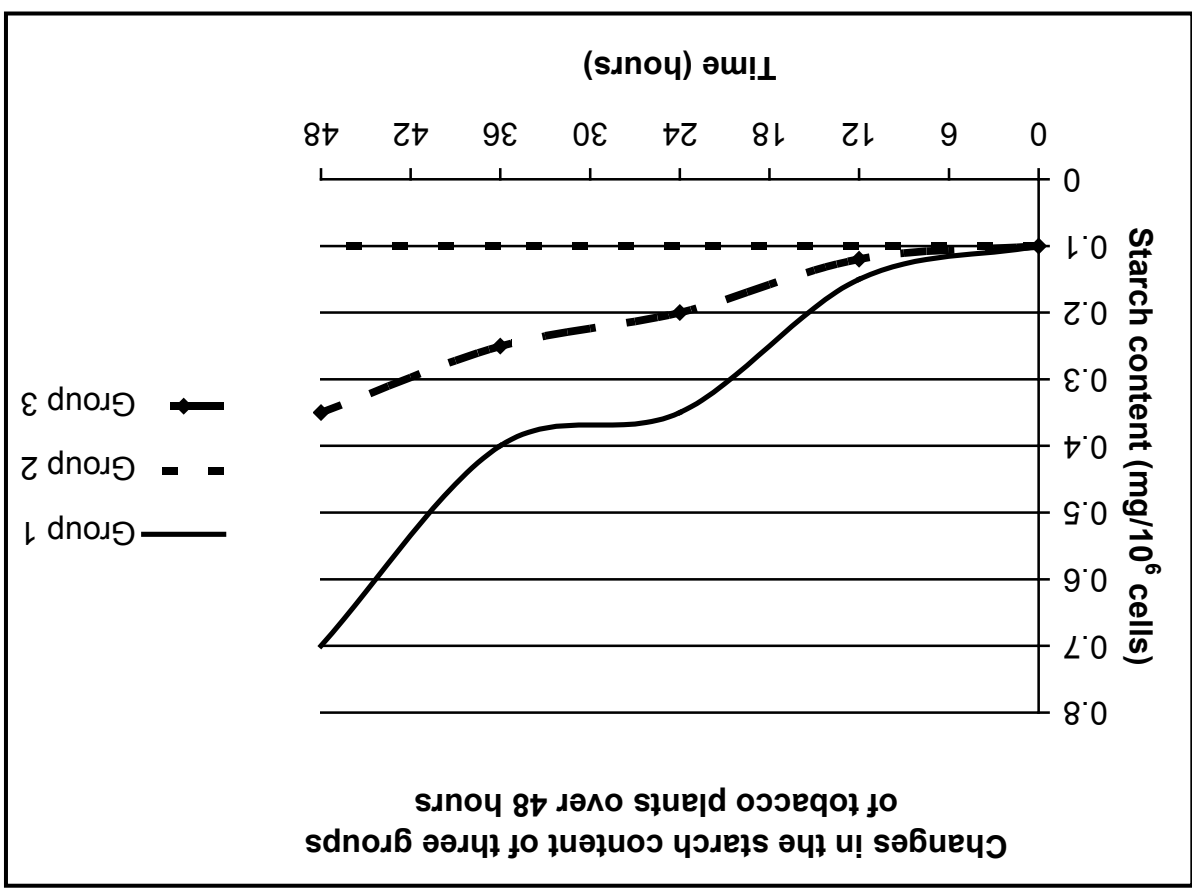
4.2

An investigation was carried out to determine the effect of two plant hormones (A and B) on the accumulation of starch in the cells of tobacco plants.

The investigation was set up as follows:

- 30 tobacco plants of the same species, size and age were used.
- They were divided into 3 groups, each treated in a different way as follows:
 - Group 1: 10 plants were treated with hormone A
 - Group 2: 10 plants were treated with hormone B
 - Group 3: 10 plants were given no hormone treatment
- All the plants were then left under the same conditions. The starch content in the cells was measured after every 6 hours for each group.

The graph below shows the results of the treatments for a period of 48 hours.



- 4.2.1 Explain the purpose of Group 3 in the investigation. (2)
- 4.2.2 Using the results, indicate the function of: (2)
- (a) Plant hormone A (2)
- (b) Plant hormone B (2)

(6)



SECTION C
QUESTION 4

4.1 Read the passage below and answer the questions that follow.

THE DESTINY OF CHINA

In 1978, the Chinese government decided that it was necessary to use its influence to slow down the population growth rate in order for all people to have sufficient food and a reasonable quality of life. The population growth rate in 1971 was 2,3%. The government goals were to reduce it to 0% by the year 2000. By 1986 it was at 1%.

A one-child policy was introduced in which couples with one child would be rewarded with good jobs, good housing, a bonus of an extra month's salary, as well as free education and medical care for the child.

[Adapted from *Integrated Science, Systems and Diversity*, 1995]

- 4.1.1 State a method that is used to determine the human population size. (1)
- 4.1.2 From the passage above, give TWO reasons why the Chinese government decided it was necessary to slow down the population growth rate. (2)
- 4.1.3 Explain how the one-child policy can influence the population size over many generations. (2)
- 4.1.4 In a country that values the birth of a son more than that of a daughter, explain how the one-child policy could influence the gender structure of the population. (2)



3.2.5 Calculate the total number of seeds produced in the area where 20 plants were grown on a 1 m² area. Show ALL working. (2)

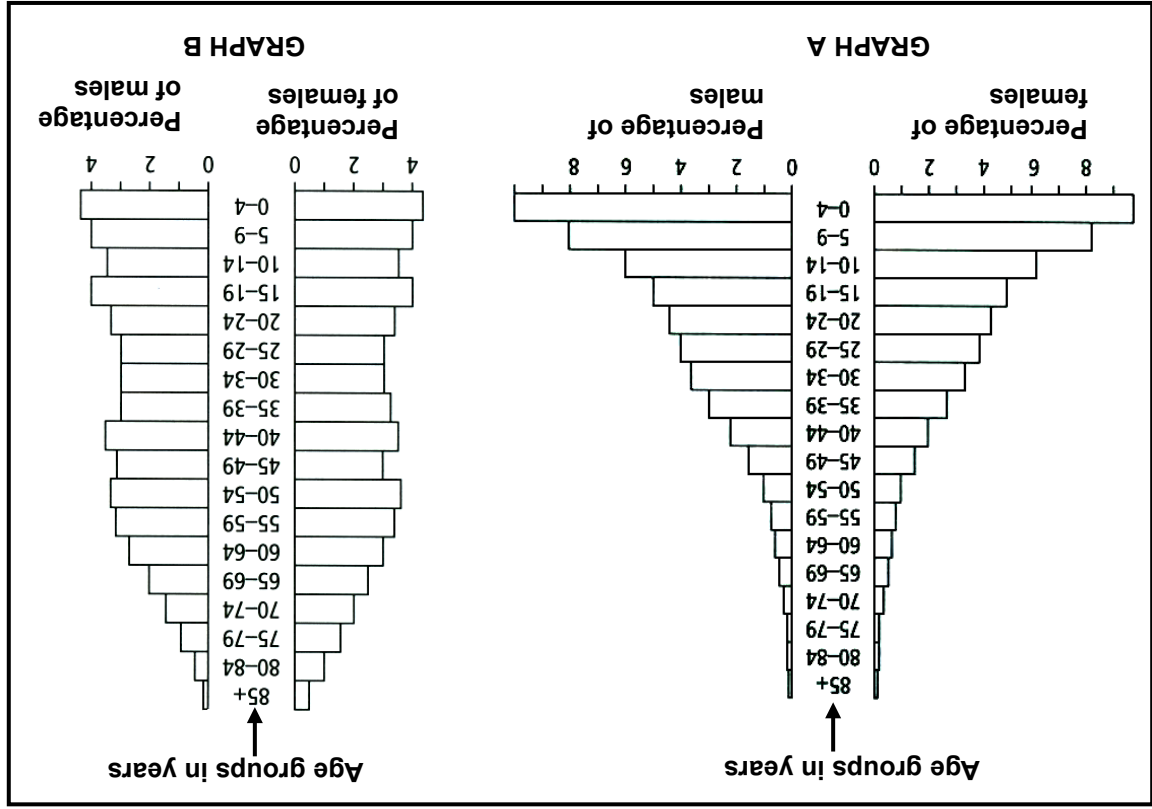
3.2.6 Which group (1 or 5) produced a greater yield of seeds per plant? (1)

3.2.7 Explain your answer to QUESTION 3.2.6. (2)

3.2.8 Apart from the environmental conditions, state TWO other factors that had to be kept constant to ensure that the results obtained were valid. (2)

(13)

3.3 The diagrams below represent graphs of age and gender distribution for a developed country and a developing country.



3.3.1 Explain the value of the information provided by the graphs above when planning for education. (2)

3.3.2 State TWO effects that a high population growth has on the environment. (2)

3.3.3 Which graph (A or B) represents the population distribution of a developing country? (1)

3.3.4 Give TWO reasons for your answer to QUESTION 3.3.3. (2)

(7)

TOTAL SECTION B: 60

Please turn over



QUESTION 3

3.1 The table below shows the changes in the population size of a type of insect over 14 weeks.

Time (weeks)	Population size
0	200
2	500
4	3 200
6	7 800
8	11 400
10	12 200
12	12 200
14	12 200

3.1.1 Plot a line graph using the information in the table above. (6)

3.1.2 On your graph, label the different phases of growth represented. (3)

3.1.3 How is the pattern of growth in the graph you have drawn different from a geometric growth form? (1)

(10)

3.2 An investigation was done to find out more about competition among pea plants. Five groups of pea plants were grown in similar soil in areas of one square metre (1 m²) each, under the same environmental conditions.

The results are shown in the table below.

Group	Number of plants per area of 1 m ²	Average number of pods per plant	Average number of seeds per pod
1	20	8,3	6,0
2	40	6,8	5,9
3	60	3,9	6,2
4	80	2,7	5,9
5	100	2,1	6,0

3.2.1 Identify TWO dependent variables for the above investigation. (2)

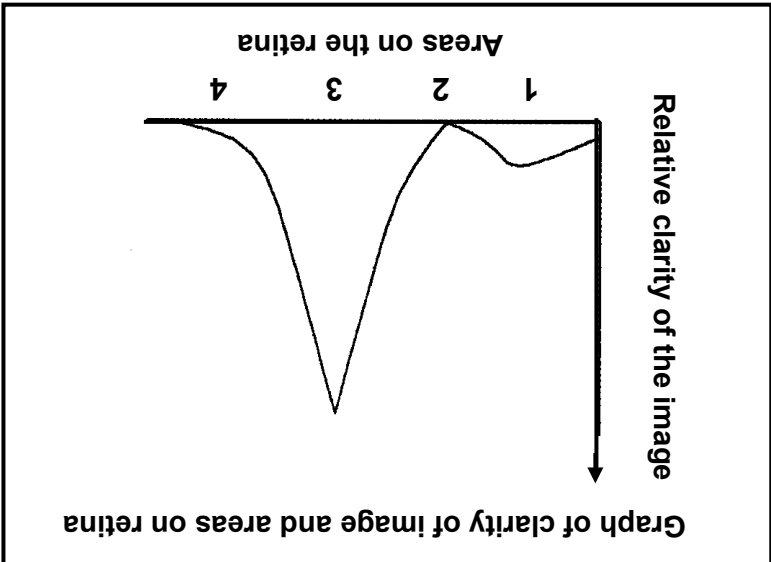
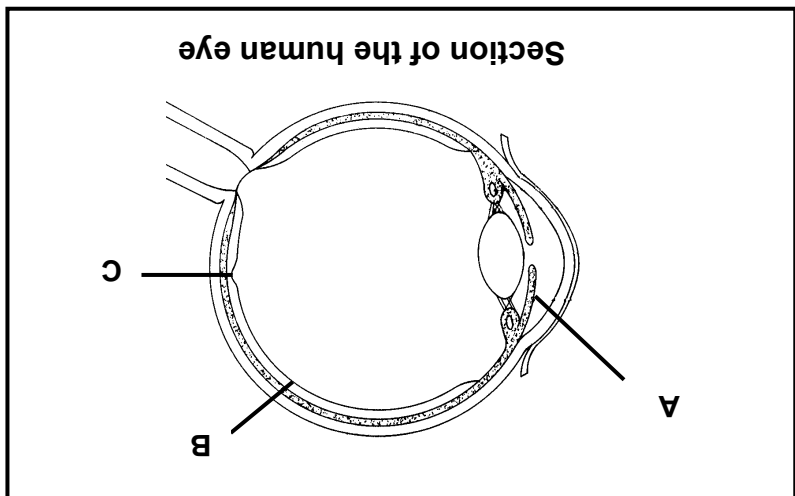
3.2.2 Which variable in the table appears to be greatly affected by competition between neighbouring plants? (1)

3.2.3 State ONE way in which the variable in QUESTION 3.2.2 was affected as the density of plants in a 1 m² area increased. (1)

3.2.4 State TWO resources for which the pea plants in this investigation might have competed. (2)



2.3 Study the diagram and the graph below and answer the questions that follow.

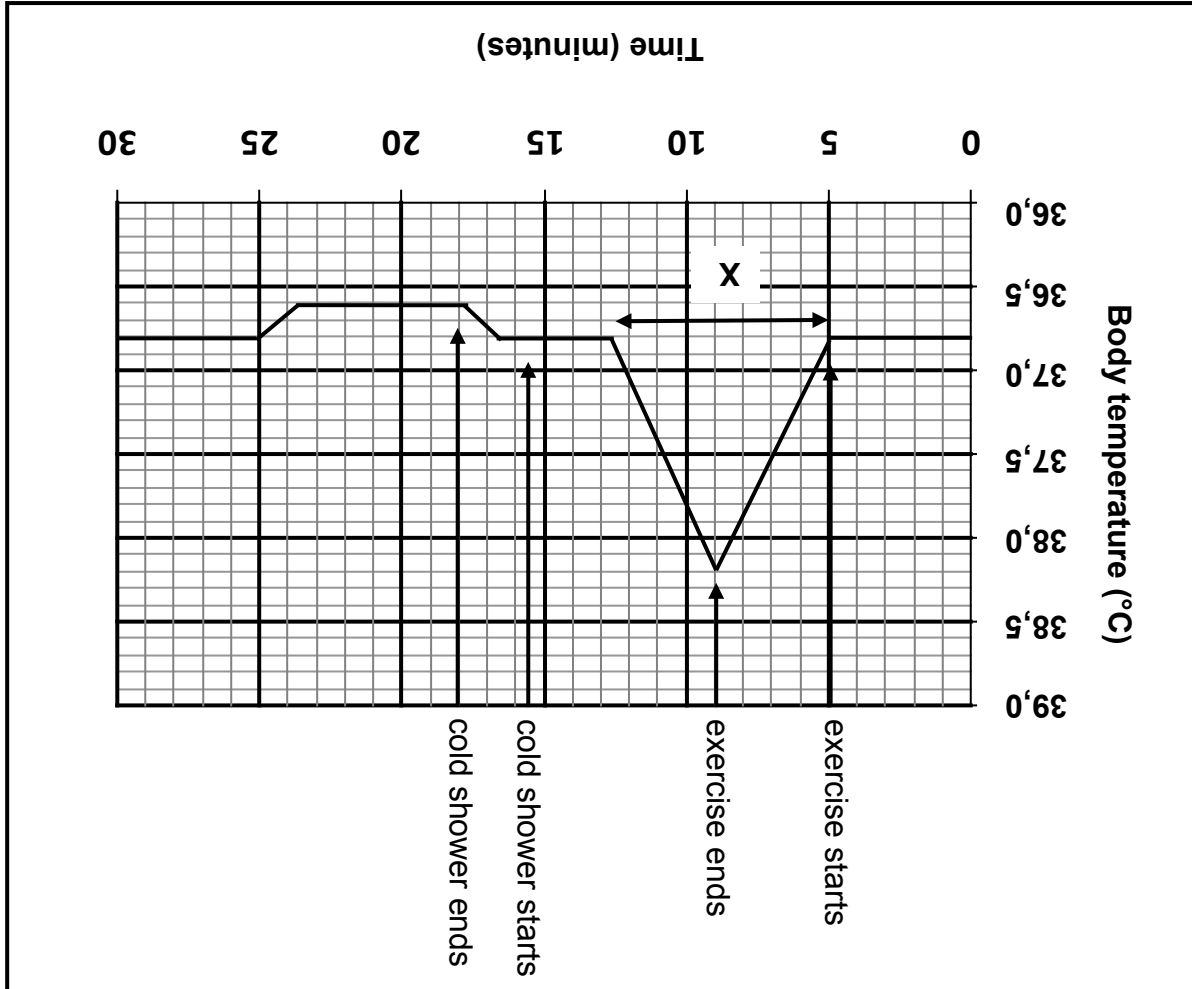


- 2.3.1 Explain ONE way in which part **B** is suitable for its function. (2)
- 2.3.2 Explain how and why the part labelled **A** makes adjustments when a person moves from bright light into a dark room. (5)
- 2.3.3 Which NUMBER (1-4) on the graph represents **C** in the diagram? (1)
- 2.3.4 Give a reason for your answer to QUESTION 2.3.3. (1)
- 2.3.5 Name the part of **B** in the diagram which corresponds to number 2 on the graph. (1)

[30]



2.2 The graph below shows changes in a person's body temperature over a period of 30 minutes.



[Adapted from *Biology 2*, Cambridge, 2007]

2.2.1 By how many °C did the temperature change during this period of 30 minutes? (2)

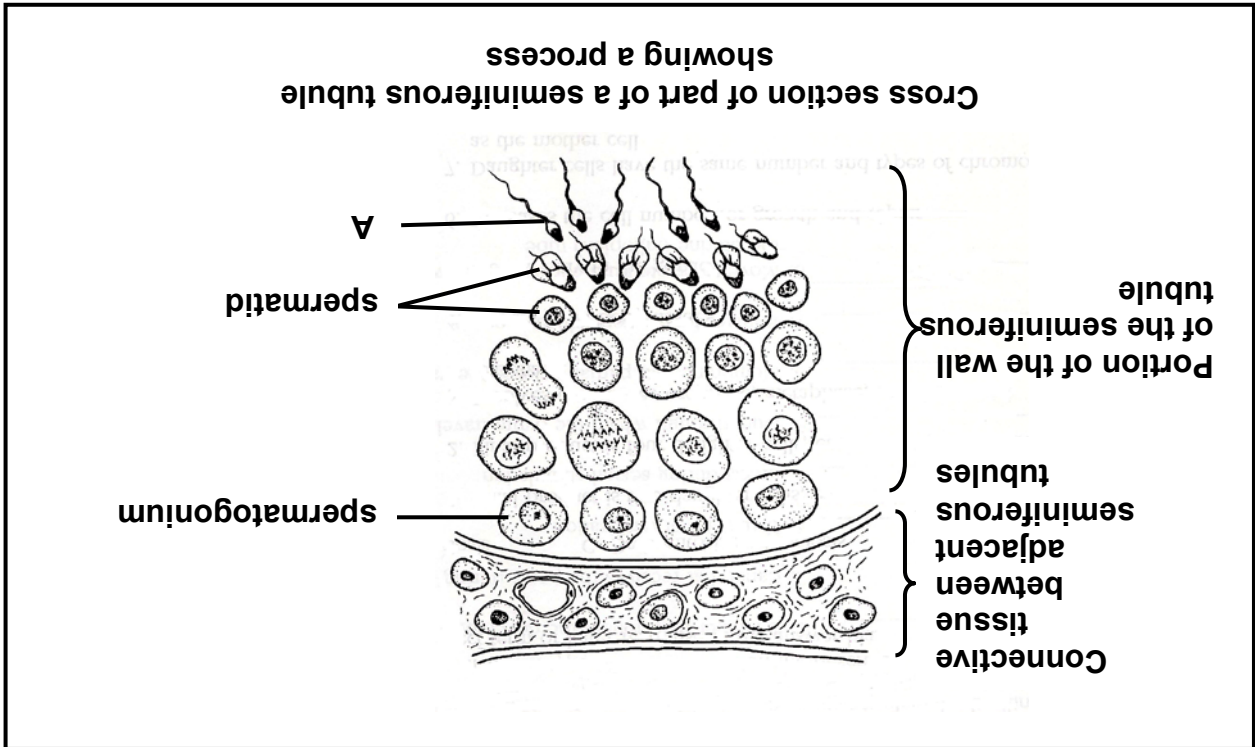
2.2.2 Account for the changes in the body temperature during period X. (8)

(10)



SECTION B
QUESTION 2

2.1 The diagram below represents a cross-section of a human seminiferous tubule in which a process is occurring.



- 2.1.1 Name the specific process illustrated in the seminiferous tubule which leads to the formation of structure A. (1)
- 2.1.2 Name the hormone produced by the organ containing seminiferous tubules. (1)
- 2.1.3 Give ONE function of the hormone named in QUESTION 2.1.2. (1)
- 2.1.4 How many chromosomes are there in each:
 - (a) Spermatogonium cell (1)
 - (b) Spermatic (1)
- 2.1.5 Make a labelled drawing to show the structure of the cell labelled A. (5)

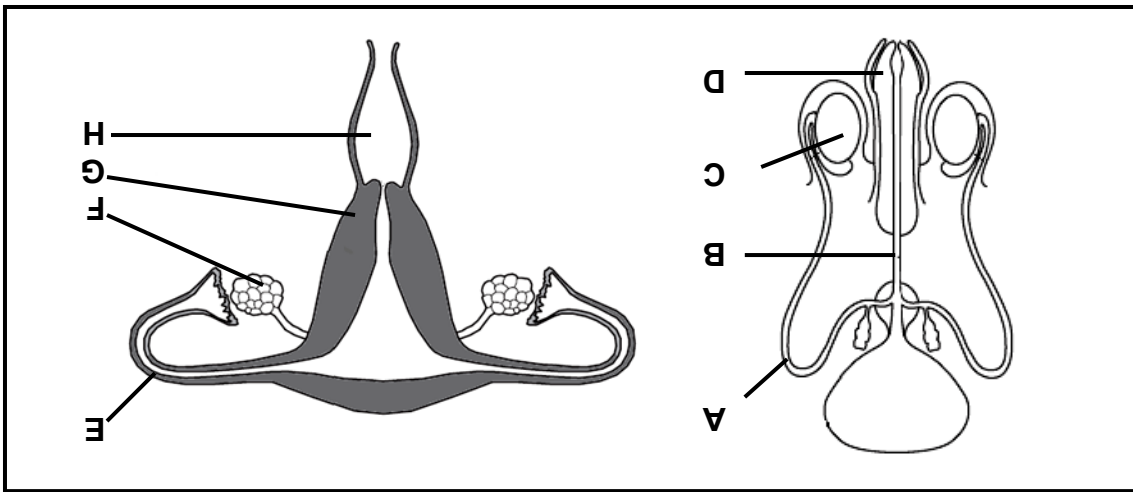
(10)





1.4

The diagrams below show the human male and female reproductive systems.



Write the LETTER (A-H) and NAME of the part:

- 1.4.1 Which transports urine to the outside of the body (2)
- 1.4.2 Where fertilisation occurs (2)
- 1.4.3 Where sperms are produced (2)
- 1.4.4 Where ova are produced (2)

(8)

TOTAL SECTION A: 50

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 to 1.2.6) in the ANSWER BOOK.

1.2.1 The maintenance of a constant internal environment in living organisms

1.2.2 Transfer of a pollen grain from an anther to a stigma

1.2.3 The production of offspring from a single plant without the fusion of gametes

1.2.4 Barriers that prevent members of two species from producing offspring

1.2.5 The development of the adult form from a fertilised egg without going through a larval stage in some insects

1.2.6 Neurons that carry impulses from receptors

(6)

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**, **both A and B** or **none** next to the question number (1.3.1 to 1.3.8) in the ANSWER BOOK.

COLUMN I	COLUMN II
1.3.1 A relationship in which both species benefit from the association	A: Commensalism B: Mutualism
1.3.2 Consumers in a food chain	A: Herbivores B: Omnivores
1.3.3 Use of the same resource by two species, but in different ways	A: Resource partitioning B: Competitive exclusion
1.3.4 Colonisation of a habitat that was previously unoccupied	A: Primary succession B: Secondary succession
1.3.5 The part of the nervous system that controls the activity of the internal organs such as the heart	A: Sympathetic B: Parasympathetic
1.3.6 Place where sound stimuli are converted into nerve impulses	A: Semi-circular canals B: Oval window
1.3.7 Importance of seeds	A: Contains food for the embryo B: Protects the embryo
1.3.8 The structure that develops from an ovary	A: Seed B: Fruit

(8 x 2)

(16)

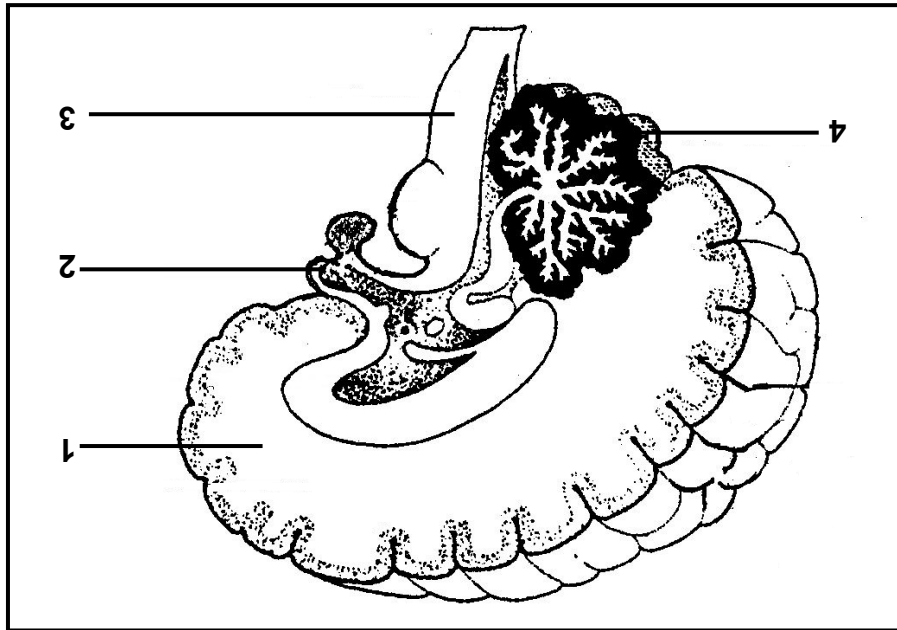


1.1.8

Which ONE of the following set of conditions will most likely result in a great increase in the population size of prey?

PREDATION	Increase	Increase	D
PREDATION	Decrease	Decrease	C
PREDATION	Increase	Increase	B
PREDATION	Decrease	Increase	A
FOOD SUPPLY	Increase	Decrease	
DISEASE	Decrease	Increase	

QUESTIONS 1.1.9 AND 1.1.10 ARE BASED ON THE DIAGRAM BELOW.



1.1.9

Which combination of labels for 2, 3 and 4 respectively is CORRECT?

- A Hypothalamus, cerebrum, cerebellum
- B Cerebrum, cerebellum, hypothalamus
- C Hypothalamus, medulla oblongata, cerebellum
- D Medulla oblongata, cerebrum, cerebellum

1.1.10

What is the function of the part numbered 1?

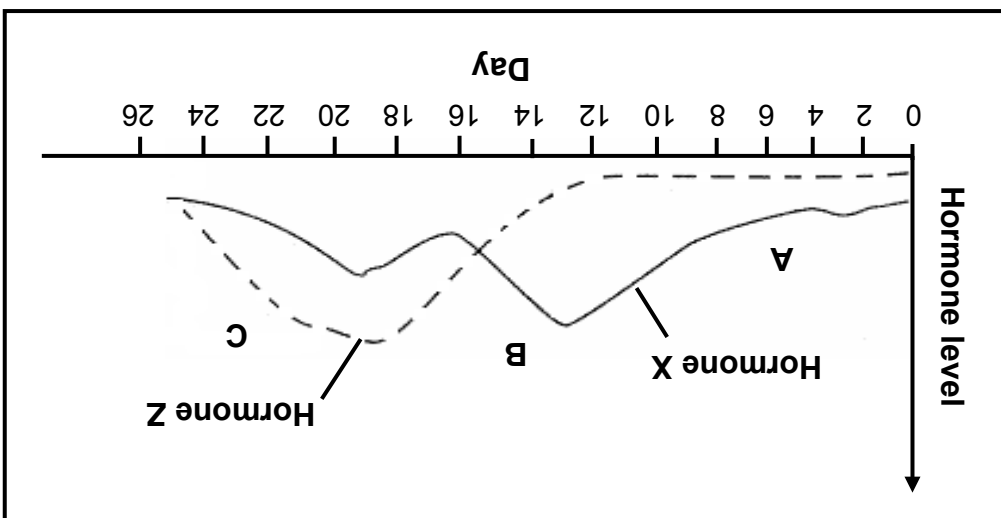
- A Responsible for muscle tone
- B Responsible for all voluntary muscular movements
- C Controls important reflex actions
- D Regulates the rate of the heartbeat

(10 x 2)

(20)



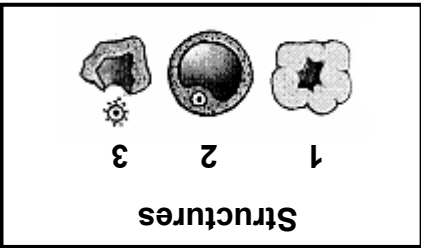
QUESTIONS 1.1.6 AND 1.1.7 ARE BASED ON THE GRAPH BELOW.



1.1.6 If fertilisation was to occur, the level of hormone Z from day 18 would ...

- A decrease as shown in the graph.
- B first decrease and then increase.
- C not decrease.
- D follow the same pattern shown in the graph for hormone X.

1.1.7 Structures 1, 2 and 3 below show different stages in the development of the follicle during the menstrual cycle.



The sequence of the structures that correspond to A, B and C on the graph above is ...

- A 1, 2, 3.
- B 2, 3, 1.
- C 2, 1, 3.
- D 3, 2, 1.



SECTION A
QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.10) in the ANSWER BOOK, for example 1.1.11 D.

1.1.1 Which of the following is an example of parasitism?
 A Bees visiting a flower
 B A bird's nest in a tree
 C A spider eating an insect
 D Ticks living on a dog

1.1.2 Which ONE of the following statements is TRUE about the relationship between a predator and its prey?
 A There is interspecific competition.
 B The size of the predator population is regulated by the size of the prey population.
 C An increased number of predators leads to an increased number of prey.
 D A decreased number of predators leads to a decreased number of prey.

1.1.3 Which part below forms part of the placenta?
 A Amnion
 B Chorion
 C Fallopian tube
 D Cervix

1.1.4 Defence mechanisms that plants have against insects include the ...
 A cell walls of cellulose.
 B production of toxic chemicals.
 C presence of an internal vascular system.
 D ability of stomata to close both day and night.

1.1.5 In order to maintain a stable population in an area where emigration and immigration do not occur ...
 A the food supply must be limited.
 B predators must be introduced.
 C the natality rate must be lower than the mortality rate.
 D the mortality rate must be equal to the natality rate.



WESTERN CAPE

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers to EACH question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, a protractor and a compass where necessary.
11. Write neatly and legibly.





MORNING SESSION

This question paper consists of 15 pages.

TIME: 2½ hours

MARKS: 150

FEBRUARY/MARCH 2014

LIFE SCIENCES P2

(LFSC.2)

GRADE 12

NATIONAL
SENIOR CERTIFICATE



Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

basic education