



# basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

**NASIONALE  
SENIOR SERTIFIKAAT**

**GRAAD 12**

**LFSC.1**

**LEWENSWETENSKAPPE V1**

**NOVEMBER 2014**

**PUNTE: 150**

**TYD: 2½ uur**

**Hierdie vraestel bestaan uit 14 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 is.
5. Bied jou antwoorde volgens die instruksies van elke vraag aan.
6. ALLE sketse moet met potlood gemaak word en die byskrifte met blou of swart ink.
7. Teken diagramme, vloedigramme en tabelle 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, gradeboog en 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 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 Die deel van die brein wat impulse vanaf die retina van die oog interpreteer, is die ...
- A serebrum.
  - B serebellum.
  - C medulla oblongata.
  - D corpus callosum.
- 1.1.2 Watter EEN van die volgende hormone is verantwoordelik vir die ontwikkeling van sekondêre manlike kenmerke?
- A FSH
  - B Testosteron
  - C Estrogeen
  - D Progesteron
- 1.1.3 Die getal chromosome wat in 'n menslike spermsel aangetref word, is ...
- A 23.
  - B 22.
  - C 46.
  - D 47.
- 1.1.4 'n Pasiënt ly aan 'n onderafskeiding van ADH. Dit sal lei tot ...
- A 'n hoë konsentrasie natrium in die urien.
  - B die aanwesigheid van glukose in die urien.
  - C 'n afname in dors.
  - D die vorming van groot volumes urien.
- 1.1.5 Beskadiging van die dendriete van 'n motoriese neuron in 'n refleksboog sal waarskynlik voorkom dat ...
- A 'n reseptor 'n prikkel/stimulus waarneem.
  - B daar sinaptiese kontak met 'n sensoriese neuron is.
  - C 'n impuls na 'n effektororgaan oorgedra word.
  - D 'n impuls na die rugmurg oorgedra word.



- 1.1.6 Die deel van die brein wat asemhaling reguleer, is die ...
- A medulla oblongata.
  - B serebrum.
  - C corpus callosum.
  - D serebellum.
- 1.1.7 Dreineringsbuisies kan gebruik word vir die behandeling van ...
- A astigmatisme.
  - B katarakte.
  - C middelloorinfeksies.
  - D versindheid.
- 1.1.8 Watter EEN van die volgende is 'n reaksie van die menslike liggaam wanneer adrenalien vrygestel word?
- A Verlaagde opname van suurstof
  - B Verhoogde bloedvloei na die ingewande
  - C Verlaagde bloedvloei na die spiere en hart
  - D Verhoogde omsetting van glikogeen na glukose
- 1.1.9 Tydens gameetvorming in vroue, vorm elke diploïede sel ...
- A vier diploïede gamete.
  - B een diploïede gameet.
  - C een haploïede gameet.
  - D twee haploïede gamete.
- 1.1.10 Oorkruising en ewekansige rangskikking van chromosome vind onderskeidelik plaas tydens ...
- A profase II en metafase II.
  - B profase I en metafase I.
  - C profase II en anafase II.
  - D profase I en anafase I.
- (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 1.2.10) in die ANTWOORDEBOEK neer.

- 1.2.1 Die membrane wat die sentrale senuweestelsel beskerm
- 1.2.2 'n Plantgroeihormoon wat saadontkieming stimuleer
- 1.2.3 Die senuweestelsel wat uit kraniale (kop-) en rugmurgsenuwees bestaan
- 1.2.4 'n Gedeelte van die outonome senuweestelsel wat die hartklop terug na normaal laat daal
- 1.2.5 Die heel buitenste ekstra-embriëniese membraan wat die embrio omring
- 1.2.6 Die hormoon wat die soutkonsentrasie in die menslike liggaam beheer
- 1.2.7 Die bloedvat in die naelstring wat bloed wat ryk aan suurstof en voedingstowwe is, vervoer
- 1.2.8 Die hormoon wat geïnhibeer word as die tiroksienvlak styg
- 1.2.9 Die ontwikkelingstydperk van 'n embrio in die uterus, tussen bevrugting en geboorte
- 1.2.10 Die struktuur in die kop van 'n spermsel wat ensieme bevat wat die membraan wat die ovum omring, afbreek (10 x 1) **(10)**

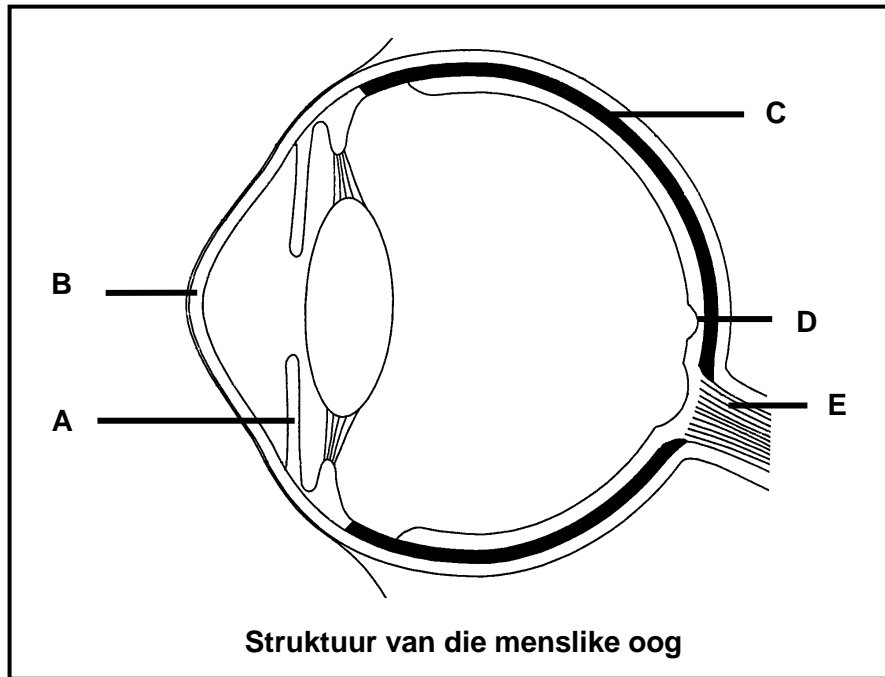
1.3 Dui aan of elk van die stellings in KOLOM I van toepassing is op **SLEGS A**, **SLEGS B**, **BEIDE A EN B** of **GEENEEN** van die items in KOLOM II nie. Skryf **slegs A**, **slegs B**, **beide A en B** of **geeneen** langs die vraagnommer (1.3.1 tot 1.3.5) in die ANTWOORDEBOEK neer.

KOLOM I	KOLOM II
1.3.1 Embrio word gevoed uit die dooier wat in die eier voorkom	A: Oviparie B: Viviparie
1.3.2 Gas wat geproduseer word wanneer organiese stowwe ontbind	A: Chlorofluorokoolstowwe ('CFCs') B: Metaan
1.3.3 Fetus is aan die moeder se uterus geheg	A: Oviparie B: Ovoviviparie
1.3.4 Jong voëltjie kan nie self voed of beweeg nadat dit uitgebroei het nie	A: Prekosiale ontwikkeling B: Altrisiale ontwikkeling
1.3.5 Verminder biodiversiteit	A: Indringing van uitheemse plante B: Verstedeliking

(5 x 2)

**(10)**

1.4 Die diagram hieronder stel die struktuur van die menslike oog voor.



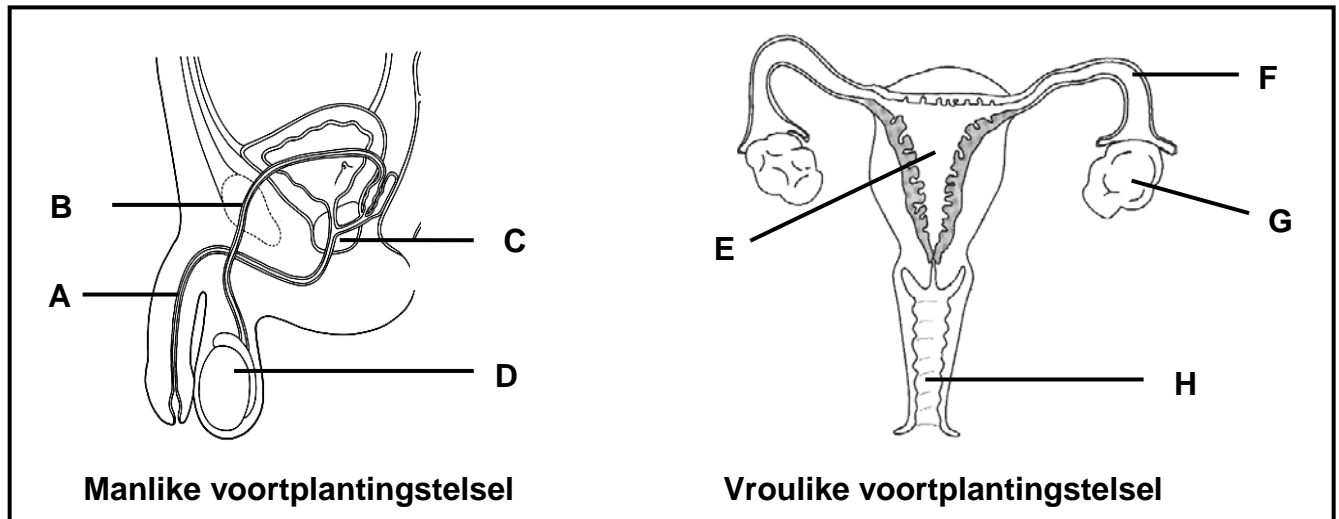
Gee die LETTER en NAAM van die deel wat:

- |       |  |             |
|-------|--|-------------|
| 1.4.1 | Die hoeveelheid lig wat die oog binnedring, beheer       | (2)         |
| 1.4.2 | Die oog van voedingstowwe en suurstof voorsien           | (2)         |
| 1.4.3 | Impulse na die brein vervoer                             | (2)         |
| 1.4.4 | Keëltjies bevat en die deel met die duidelikste visie is | (2)         |
| 1.4.5 | Met die breking van ligstrale help                       | (2)         |
|       |  | <b>(10)</b> |

**TOTAAL AFDELING A: 50**

**AFDELING B****VRAAG 2**

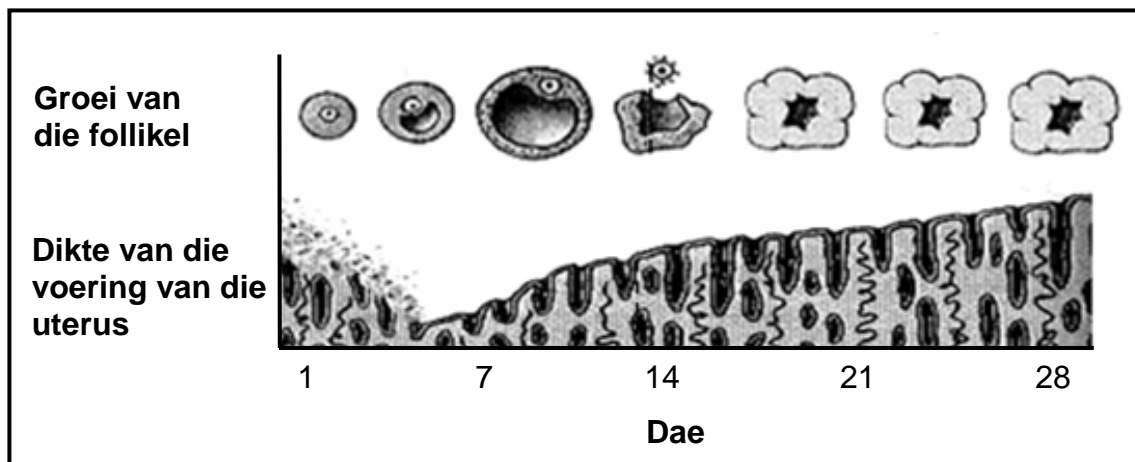
2.1 Bestudeer die diagramme hieronder wat die manlike en vroulike voortplantingstelsels toon.



- 2.1.1      Identifiseer deel **A**, **B** en **F** onderskeidelik.                      (3)
- 2.1.2      Noem EEN funksie van elk van die volgende:
- (a) Die vloeistof wat deur deel **C** geproduseer word                      (1)
- (b) Deel **E**                      (1)
- 2.1.3      Gee SLEGS die LETTER van die orgaan waar meiose plaasvind in die:
- (a) Manlike voortplantingstelsel                      (1)
- (b) Vroulike voortplantingstelsel                      (1)
- 2.1.4      Noem die soort gametogenese wat plaasvind in die:
- (a) Manlike voortplantingstelsel                      (1)
- (b) Vroulike voortplantingstelsel                      (1)
- 2.1.5      Noem TWEE funksies van deel **H**.                      (2)
- 2.1.6      Verduidelik waarom dit noodsaaklik is dat deel **D** aan die 'buitekant' van mans se liggame moet wees.                      (2)

**(13)**

- 2.2 Die diagram hieronder toon sommige van die veranderinge wat tydens die menstruele siklus plaasvind.



- 2.2.1 Die menstruele siklus word deur hormone beheer. Noem EEN hormoon waarvan die vlak tussen dag 2 en dag 10 styg. (1)
- 2.2.2 Gee EEN waarneembare rede vir jou antwoord op VRAAG 2.2.1. (2)
- 2.2.3 Verduidelik bewyse in die diagram wat aandui dat bevrugting plaasgevind het. (3)
- 2.2.4 Beskryf die ontwikkelingsveranderinge in die bevrugte eiersel totdat inplanting in die uterus plaasvind. (5)
- 2.2.5 Sommige vroue gebruik 'n ovulasiemonitor sodat hulle kan weet op watter dae hulle vrugbaar is. Hierdie monitormeet hormoonvlakke in die bloed.
- (a) Waarom sou vroue wou weet wanneer hulle vrugbaar is? (1)
- (b) Verduidelik watter hormoon waarskynlik deur die ovulasiemonitor gemonitor word. (3)
- (15)**

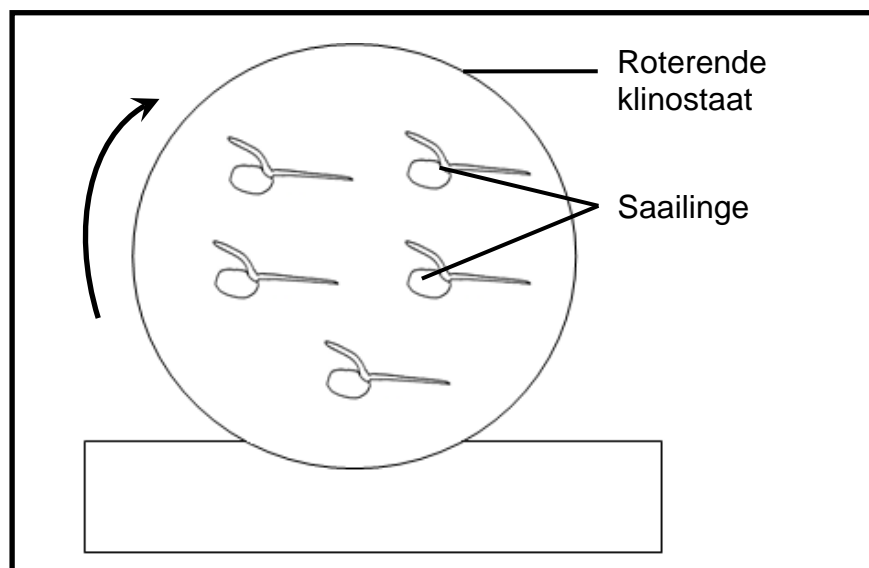


2.3 'n Leerder het 'n ondersoek gedoen om die invloed van ouksiene en die invloed van swaartekrag op wortelgroei by ertjiesaaillinge te bepaal. Hy het die volgende prosedure gevolg:

- Hy het ertjiesade vir sewe dae laat ontkiem.
- Hy het toe 'n monster van 15 saailinge geneem en hulle in 3 groepe (A tot C) met 5 saailinge elk verdeel.
- In elke groep is die 5 saailinge **horisontaal** op 3 verskillende klinostate geplaas.

'n Klinostaat is 'n toestel wat 'n skyf bevat wat teen 'n konstante spoed roteer (draai).

'n Diagram van 'n klinostaat word hieronder getoon.



- Hy het die wortelpunte van al 5 saailinge op dieselfde lengte in groep B verwyder.
- By groepe A en B is die klinostate stilstaande gelaat (geen rotasie nie).
- By groep C is die klinostaat toegelaat om te roteer.
- Al 3 klinostate is in 'n donker kas geplaas.

'n Opsomming van die leerder se prosedure word in die tabel hieronder getoon.

GROEP A	GROEP B	GROEP C
Wortelpunte aanwesig	Geen wortelpunte nie	Wortelpunte aanwesig
Stilstaande klinostaat	Stilstaande klinostaat	Roterende klinostaat

Na twee dae is die rigting van wortelgroei waargeneem.

- 2.3.1 Watter TWEE groepe is gebruik om inligting te bekom omtrent:
- (a) Die invloed van oksiene op wortelgroei (1)
  - (b) Die invloed van swaartekrag op wortelgroei (1)
- 2.3.2 Verduidelik waarom die apparaat in 'n donker kas geplaas is. (2)
- 2.3.3 Beskryf die verwagte resultate vir elk van groep **B** en **C** vir hierdie ondersoek. (2)
- 2.3.4 Verduidelik die verwagte resultate van groep **A**. (3)
- 2.3.5 Noem DRIE maniere waarop die leerder 'n hoë vlak van geldigheid vir hierdie ondersoek verseker het. (3)
- (12)**  
**[40]**



**VRAAG 3**

3.1 'n Boer het 'n ondersoek uitgevoer om te bepaal watter soort kunsmis die opbrengs van haar koringoes sou verhoog.

- Sy het haar plaas in drie dele van 1 hektaar elk verdeel en hulle soos volg behandel:

<b>Behandeling</b>	<b>Hektaar A</b>	<b>Hektaar B</b>	<b>Hektaar C</b>
Soort kunsmis	Geen	Bevat stikstof	Bevat fosfor
Hoeveelheid kunsmis (kg)	Geen	10	10

- Sy het dieselfde soort gewas, naamlik koring, elke jaar in November vir vyf jaar geplant.
- Sy het water uit 'n rivier wat deur die plaas vloei, gebruik om haar gewas te besproei.
- Sy het die opbrengs per deel vir elke jaar aangeteken. Die opbrengs is gemeet deur die hoeveelheid kilogram koring wat per hektaar geproduseer is, te bereken.

- 3.1.1 Identifiseer die afhanklike veranderlike vir hierdie ondersoek. (1)
- 3.1.2 Verduidelik die doel van die insluiting van hektaar **A** by hierdie ondersoek. (2)
- 3.1.3 Noem EEN manier waarop die boer die betroubaarheid van haar resultate kon verhoog het. (1)
- 3.1.4 Indien hierdie ondersoek vir langer as vyf jaar uitgevoer sou word, noem DRIE negatiewe gevolge as dieselfde soort gewas vir baie jare op dieselfde stuk grond geplant sou word. (3)
- 3.1.5 Verduidelik hoe die oormatige gebruik van kunsmis/bemestingstowwe die biodiversiteit kan beïnvloed indien dit in die rivier sou beland. (4)
- (11)**



## 3.2 Lees die uittreksel hieronder oor voedselvermorsing regoor die wêreld.

**VOEDSELVERMORSING IN DIE WÊRELD**

Elke jaar word 'n derde van alle voedsel vir menslike gebruik, omtrent 1,3 biljoen ton, in die wêreld vermors. Die VN se Voedsel- en Landbou-organisasie (VLO) skat dat die koolstofvoetspoor van vermorste voedsel die ekwivalent van 3,3 biljoen ton koolstofdiksied 'n jaar is. Die VLO stel voor dat meer effektiewe gebruik van voedsel kan bydra tot wêreldwye pogings om kweekhuysgasse te verminder om aardverwarming te beperk.

In die geïndustrialiseerde wêreld kom baie van die vermorsing van verbruikers af wat te veel koop en dan dit wat hulle nie eet nie, weggooi. In ontwikkelende lande is dit hoofsaaklik die gevolg van oneffektiewe boerdery en 'n gebrek aan behoorlike bergingsfasiliteite.

[Aangepas uit: *Reuters Daily News*, September 2013]

3.2.1 Wat word met die volgende terme bedoel:

(a) Koolstofvoetspoor (2)

(b) Voedselsekerheid/Voedselsekuriteit (2)

3.2.2 Verduidelik hoe vermorsing van voedsel tot energieverlies en aardverwarming bydra. (4)

3.2.3 Gebruik die inligting in die uittreksel en stel TWEE maniere voor waarop voedselvermorsing verminder kan word. (2)  
**(10)**

3.3 Die tabel hieronder toon hoe liggaamstemperatuur deur die hipotalamus beheer word deurdat dit hitteproduksie en hitteverlies beïnvloed.

LIGGAAMS-TEMPERATUUR (°C)	HITTEPRODUKSIE (JOULE PER SEKONDE)	HITTEVERLIES (JOULE PER SEKONDE)
36,4	320	5
36,6	260	5
36,8	150	35
36,9	90	90
37,0	90	100
37,2	90	180
37,4	90	310

[Aangepas uit *Cambridge Biology*, 2002]

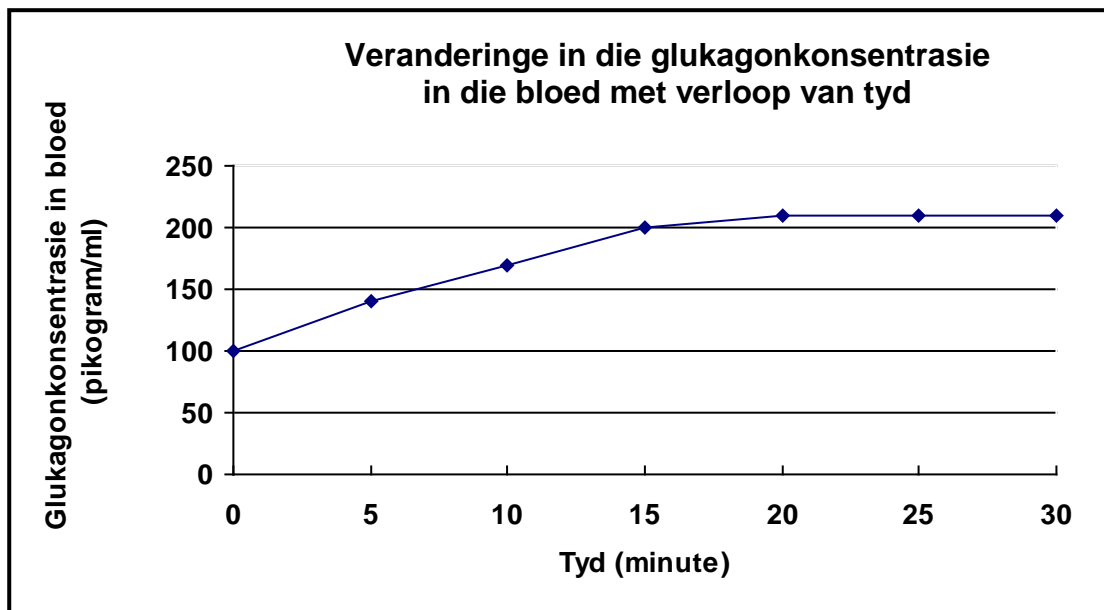
3.3.1 Is die bloedvate wat bloed aan die vel voorsien, vernou of verwyd wanneer die liggaamstemperatuur 36,4 °C is? (1)

3.3.2 Verduidelik die voordeel van die deursnee van die bloedvate (vernou/verwyd) wat in jou antwoord op VRAAG 3.3.1 genoem is. (4)

3.3.3 Hitteverlies is die meeste by 37,4 °C. Verduidelik hoe die liggaam in staat is om hitteverlies te verhoog. (4)  
**(9)**



- 3.4 Bestudeer die grafiek hieronder wat die veranderinge in die glukagonkonsentrasie tydens oefeninge toon.



- 3.4.1 Beskryf die tendens in die veranderinge in die glukagonvlak met verloop van tyd. (3)
- 3.4.2 Verduidelik die veranderinge in die glukagonvlak van 0 tot 10 minute. (3)
- 3.4.3 Neem die patroon van die glukagonkonsentrasie van 0 tot 10 minute in die grafiek hierbo in ag. Wat verwag jy sal in dieselfde tydperk met die insulienkonsentrasie gebeur? (1)
- 3.4.4 Verduidelik waarom mense met diabetes mellitus baie min glikoëen in hulle lewer- en spierselle het. (3)
- (10)**  
**[40]**

**TOTAAL AFDELING B: 80**



**AFDELING C****VRAAG 4**

'n Doelwagter in 'n sokkerwedstryd het voorkom dat 'n doel aangeteken word toe hy na regs geduik het nadat die bal na hom toe geskop is. Net voordat hy geduik het, het hy sy spanmaat hoor skree, 'jou bal'.

Beskryf hoe sy oë aangepas het om die bal te sien terwyl dit na hom toe beweeg het en beskryf hoe hy sy spanmaat gehoor het en sy balans gehandhaaf het toe hy geduik het om die bal te keer.

Inhoud: **(17)**  
Sintese: **(3)**

**LET WEL:** GEEN punte sal toegeken word vir antwoorde in die vorm van vloeddiagramme, diagramme of tabelle NIE.

**TOTAAL AFDELING C: 20**  
**GROOTTOTAAL: 150**





**QUESTION 4**

**SECTION C**

A goalkeeper in a soccer match prevented a goal from being scored when he dived to his right after the ball was kicked towards him. Just before he dived, he heard his team-mate shout, 'your ball'.

Describe how his eyes adjusted to see the ball as it travelled towards him and describe how he heard his team-mate and maintained his balance as he dived to save the ball.

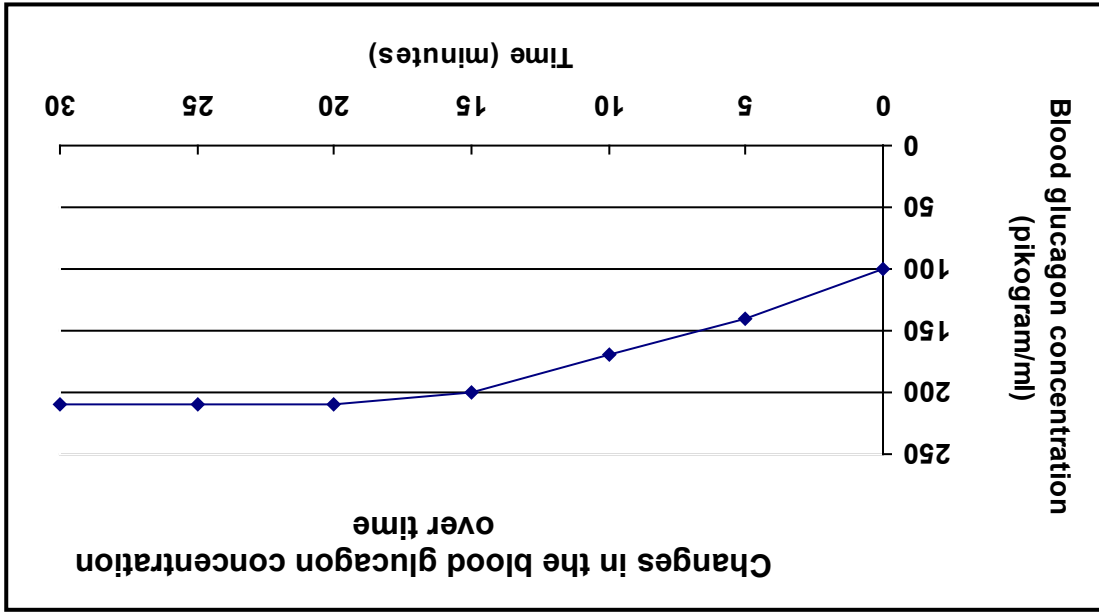
(17) Content:  
(3) Synthesis:

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

**TOTAL SECTION C: 20**  
**GRAND TOTAL: 150**



3.4 Study the graph below showing the changes in the glucagon concentration during exercise.



- 3.4.1 Describe the trend for the changes in the glucagon level over time. (3)
- 3.4.2 Explain the changes in the level of glucagon from 0 to 10 minutes. (3)
- 3.4.3 Taking into account the pattern for glucagon concentration from 0 to 10 minutes in the graph above, what will you expect to happen to the insulin concentration for the same period? (1)
- 3.4.4 Explain why people with diabetes mellitus have very little glycogen in their liver and muscle cells. (3)

[40]  
(10)  
(3)

80 TOTAL SECTION B:



3.2

Read the passage below about food wastage around the world.

**FOOD WASTAGE AROUND THE WORLD**

Every year a third of all food for human consumption, about 1,3 billion tons, is wasted in the world. The UN Food and Agriculture Organisation (FAO) estimated that the carbon footprint of wasted food was equivalent to 3,3 billion tons of carbon dioxide a year. The FAO suggests that more efficient use of food could contribute to global efforts to cut greenhouse gases to limit global warming.

In the industrialised world, much of the waste comes from consumers buying too much and throwing away what they do not eat. In developing countries it is mainly the result of inefficient farming and a lack of proper storage facilities.

[Adapted from: *Reuters Daily News*, September 2013]

3.2.1

What is meant by the following terms:

- (2) (a) Carbon footprint
- (2) (b) Food security
- (4) 3.2.2 Explain how wastage of food contributes to loss of energy and global warming.
- (2) 3.2.3 Use the information in the passage to suggest TWO ways in which food wastage could be reduced.

3.3

The table below shows how body temperature is regulated by the hypothalamus by influencing heat production and heat loss.

BODY TEMPERATURE (°C)	HEAT PRODUCTION (JOULES PER SECOND)	HEAT LOSS (JOULES PER SECOND)
36,4	320	5
36,6	260	5
36,8	150	35
36,9	90	90
37,0	90	100
37,2	90	180
37,4	90	310

[Adapted from *Cambridge Biology*, 2002]

- (1) 3.3.1 Are the blood vessels that supply blood to the skin constricted or dilated when the body temperature is 36,4 °C?
- (4) 3.3.2 Explain the advantage of the diameter of the blood vessels (constricted/dilated) mentioned in your answer to QUESTION 3.3.1.
- (4) 3.3.3 Heat loss is the greatest at 37,4 °C. Explain how the body is able to increase heat loss.



(9)

**QUESTION 3**

3.1 A farmer conducted an investigation to determine which type of fertiliser would increase the yield of her wheat crop.

- She divided her farm into three 1 hectare plots and treated them as follows:

Treatment	Hectare A	Hectare B	Hectare C
Type of fertiliser	None	Contains nitrogen	Contains phosphorus
Amount of fertiliser (kg)	None	10	10

- She planted the same type of crop, namely wheat, during November each year for five years.
- She used water from a river which flows through the farm to irrigate her crop.
- She recorded the yield per plot for each year. The yield was measured by calculating the number of kilograms of wheat produced per hectare.

- 3.1.1 Identify the dependent variable in this investigation. (1)
- 3.1.2 Explain the purpose of including hectare A in this investigation. (2)
- 3.1.3 State ONE way in which the farmer could have increased the reliability of her results. (1)
- 3.1.4 If this investigation was carried out for more than five years, list THREE negative effects of planting the same type of crop over many years on the same plot of land. (3)
- 3.1.5 Explain how the excessive use of fertilisers can affect biodiversity if it is washed into the river. (4)

(11)





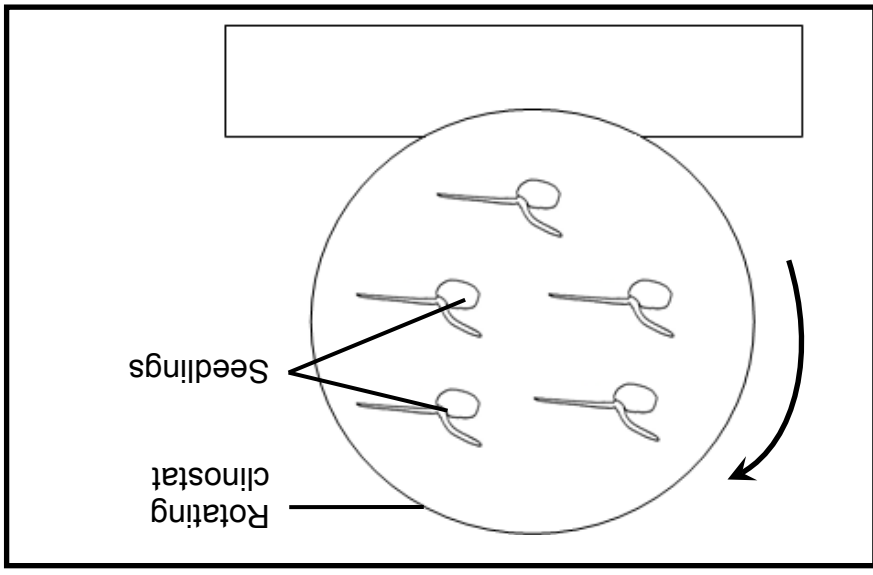
- 2.3.1 Which TWO groups were used to obtain information about:
- (a) The effect of auxins on root growth (1)
- (b) The effect of gravity on root growth (1)
- 2.3.2 Explain why the apparatus was placed in a dark cupboard. (2)
- 2.3.3 Describe the expected results for each of groups **B** and **C** in this investigation. (2)
- 2.3.4 Explain the expected results for group **A**. (3)
- 2.3.5 State THREE ways in which the learner ensured a high level of validity for this investigation. (3)
- [12]**
- [40]**

2.3

A learner conducted an investigation to determine the effect of auxins and the effect of gravity on root growth in pea seedlings. He used the following procedure:

- He germinated pea seeds for seven days.
- He then took a sample of 15 seedlings and divided them into 3 groups (A to C) of 5 seedlings each.
- In each group the 5 seedlings were placed **horizontally** on 3 different clinostats.

A clinostat is a device which has a disc that rotates at a constant speed. A diagram of a clinostat is shown below.



- He removed the root tips of all 5 seedlings at the same length in group B.
- In groups A and B the clinostats were left stationary (no rotation).
- In group C the clinostat was allowed to rotate.
- All 3 clinostats were placed in a dark cupboard.

A summary of the learner's procedure is shown in the table below.

GROUP A	GROUP B	GROUP C
Root tips present	No root tips	Root tips present
Stationary clinostat	Stationary clinostat	Rotating clinostat

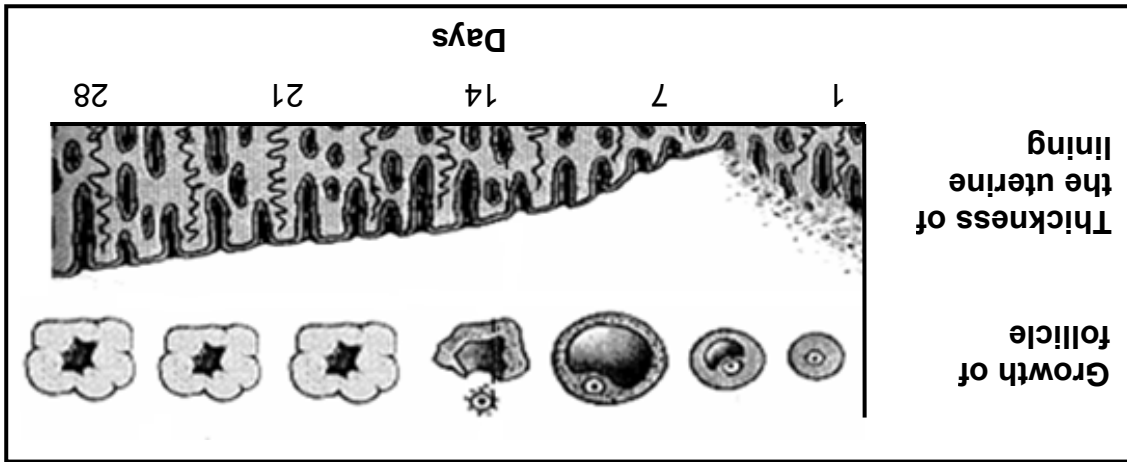
After two days the direction of root growth was observed.





- 2.2.1 The menstrual cycle is controlled by hormones. Name ONE hormone which will increase in level between day 2 and day 10. (1)
- 2.2.2 Give ONE observable reason for your answer to QUESTION 2.2.1. (2)
- 2.2.3 Explain evidence from the diagram which indicates that fertilisation took place. (3)
- 2.2.4 Describe the developmental changes in the fertilised ovum until implantation occurs in the uterus. (5)
- 2.2.5 Some females use an ovulation monitor so that they can be aware of the days when they are fertile. These monitors measure the level of hormones in the blood. (1)
- (a) Why would females want to know when they are fertile? (1)
- (b) Explain which hormone is likely to be monitored by the ovulation monitor. (3)

(15)

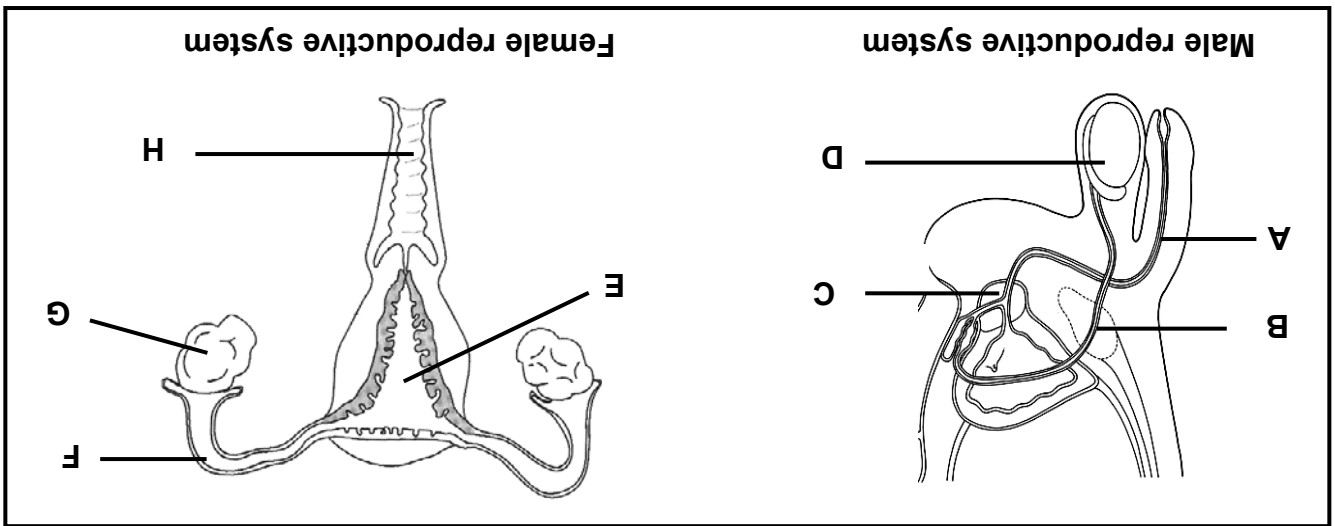


2.2 The diagram below shows some of the changes that take place during the menstrual cycle.

**SECTION B**

**QUESTION 2**

2.1 Study the diagrams below showing the male and female reproductive systems.



2.1.1 Identify parts **A**, **B** and **F** respectively. (3)

2.1.2 State ONE function of each of the following: (1)

(a) The fluid produced by part **C** (1)

(b) Part **E** (1)

2.1.3 Give the LETTER ONLY of the organ where meiosis takes place in the: (1)

(a) Male reproductive system (1)

(b) Female reproductive system (1)

2.1.4 Name the type of gametogenesis that takes place in the: (1)

(a) Male reproductive system (1)

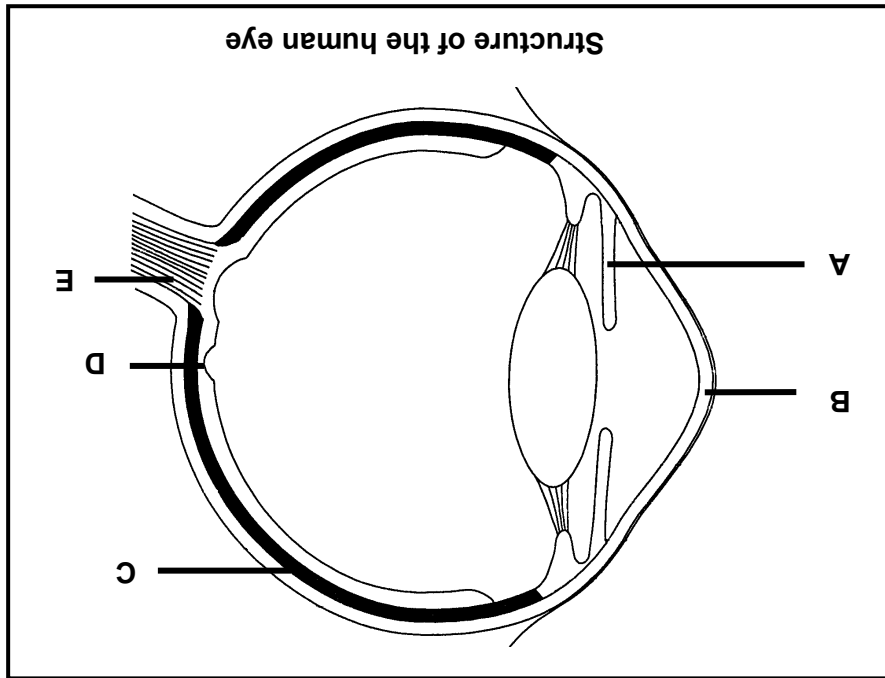
(b) Female reproductive system (1)

2.1.5 State TWO functions of part **H**. (2)

2.1.6 Explain why it is necessary for part **D** to be 'outside' the body in males. (2)

(13)





1.4 The diagram below represents the structure of the human eye.

- Give the LETTER and the NAME of the part which:
- |       |   |     |
|-------|---|-----|
| 1.4.1 | Regulates the amount of light entering the eye    | (2) |
| 1.4.2 | Supplies food and oxygen to the eye               | (2) |
| 1.4.3 | Transmits impulses to the brain                   | (2) |
| 1.4.4 | Contains cones and is the area of clearest vision | (2) |
| 1.4.5 | Assists in the refraction of light rays           | (2) |
- TOTAL SECTION A: 50**

**(10)**

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 1.2.10) in the ANSWER BOOK.

1.2.1 The membranes which protect the central nervous system

1.2.2 A plant growth hormone that stimulates seed germination

1.2.3 The nervous system which consists of cranial and spinal nerves

1.2.4 A branch of the autonomic nervous system that decreases the heartbeat back to normal

1.2.5 The outermost extra-embryonic membrane surrounding the embryo

1.2.6 The hormone that regulates the salt concentration in the human body

1.2.7 The blood vessel in the umbilical cord that carries blood rich in oxygen and nutrients

1.2.8 The hormone inhibited by an increased level of thyroxin

1.2.9 The period of development of an embryo in the uterus, between fertilisation and birth

1.2.10 The structure in the head of a sperm cell that contains enzymes which break down the membrane surrounding the ovum

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 1.3.5) in the ANSWER BOOK.

COLUMN I	COLUMN II
1.3.1 Embryo is nourished with yolk found in the egg	A: Ovipary B: Vivipary
1.3.2 Gas produced when organic matter decomposes	A: Chlorofluorocarbons (CFCs) B: Methane
1.3.3 Foetus is attached to the mother's uterus	A: Ovipary B: Ovivipary
1.3.4 Young bird cannot feed or move independently after hatching	A: Precocial development B: Altricial development
1.3.5 Decreases biodiversity	A: Alien plant invasion B: Urbanisation

(5 x 2)

(10)







- 1.1.6 The part of the brain that regulates breathing is the ...
- A medulla oblongata.  
B cerebrum.  
C corpus callosum.  
D cerebellum.
- 1.1.7 Grommets may be used in the treatment of ...
- A astigmatism.  
B cataracts.  
C middle ear infections.  
D long-sightedness.
- 1.1.8 Which ONE of the following is a response of the human body when adrenalin is released?
- A Decreased oxygen intake  
B Increased blood flow to the intestines  
C Decreased blood flow to the muscles and heart  
D Increased conversion of glycogen to glucose
- 1.1.9 In gamete formation in human females, each diploid cell forms ...
- A four diploid gametes.  
B one diploid gamete.  
C one haploid gamete.  
D two haploid gametes.
- 1.1.10 Crossing-over and random arrangement of chromosomes occur respectively in ...
- A prophase II and metaphase II.  
B prophase I and metaphase I.  
C prophase II and anaphase II.  
D prophase I and anaphase I.
- (10 x 2) (20)

**SECTION A**  
**QUESTION 1**

1.1 Various options are given as possible answers to the following questions. Choose the 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 The part of the brain that interprets impulses from the retina of the eye is the ...  
 A cerebrum.  
 B cerebellum.  
 C medulla oblongata.  
 D corpus callosum.
- 1.1.2 Which ONE of the following hormones is responsible for the development of secondary male characteristics?  
 A FSH  
 B Testosterone  
 C Oestrogen  
 D Progesterone
- 1.1.3 The number of chromosomes found in a human sperm cell is ...  
 A 23.  
 B 22.  
 C 46.  
 D 47.
- 1.1.4 A patient suffers from an undersecretion of ADH. This will lead to ...  
 A a high concentration of sodium in the urine.  
 B the presence of glucose in the urine.  
 C decreased thirst.  
 D the formation of large volumes of urine.
- 1.1.5 Damage to the dendrites of a motor neuron in a reflex arc would probably prevent ...  
 A a receptor from receiving a stimulus.  
 B synaptic contact with a sensory neuron.  
 C an impulse from being transmitted to an effector organ.  
 D an impulse from being transmitted to the spinal cord.





## 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. ALL drawings must be done in pencil and labelled in blue or black ink.
7. Draw diagrams, flow charts or tables 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, protractor and a compass where necessary.
11. Write neatly and legibly.



# MORNING SESSION

This question paper consists of 14 pages.

TIME: 2½ hours

MARKS: 150

LFSC.1  
LIFE SCIENCES P1  
NOVEMBER 2014

GRADE 12

NATIONAL  
SENIOR CERTIFICATE

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

basic education

