

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

LIFE SCIENCES P1
VERSION 1 (NEW CONTENT) FOR FULL-TIME CANDIDATES
NOVEMBER 2011
FINAL MEMORANDUM – 29/11/2011

MARKS: 150

DEPARTMENT OF BASIC EDUCATION
2011 -11- 10 PRIVATE BAG X 110 PRETORIA 0001
PUBLIC EXAMINATIONS

[Signature]
INT MOD
29/11/2011

[Signature]
P. Preethhall
L.MALUSI
29/11/2011

This memorandum consists of 12 pages.

P.B. MAJOZI
External Moderator
(Lmalusi)

[Signature]
A.A. CROWE
EXTERNAL MODERATOR
29/11/2011

[Signature] 29/11/11
Please turn over

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2011

1. **If more information than marks allocated is given**
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right hand margin.
2. **If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **If whole process is given when only part of it is required**
Read all and credit relevant part.
4. **If comparisons are asked for and descriptions are given**
Accept if differences/similarities are clear.
5. **If tabulation is required but paragraphs are given**
Candidates will lose marks for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**
Candidates will lose marks.
7. **If flow charts are given instead of descriptions**
Candidates will lose marks.
8. **If sequence is muddled and links do not make sense**
Where sequence and links are correct, credit. Where sequence and links is incorrect, do not credit. If sequence and links becomes correct again, resume credit.
9. **Non-recognized abbreviations**
Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of answer if correct.
10. **Wrong numbering**
If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable. Indicate that the candidate's numbering is wrong.
11. **If language used changes the intended meaning**
Do not accept.
12. **Spelling errors**
If recognizable accept provided it does not mean something else in Life Sciences or if it is out of context.
13. **If common names given in terminology**
Accept, provided it was accepted at the National memo discussion meeting.

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14. **If only letter is asked for and only name is given (and vice versa)**
No credit.
15. **If units are not given in measurements**
Memorandum will allocate marks for units separately, except where it is already given in the question.
16. Be sensitive to the **sense of an answer, which may be stated in a different way.**
17. **Caption**
Credit will be given for captions to all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.
19. No changes must be made to the marking memoranda. In exceptional cases, the Provincial Internal Moderator will consult with the National Internal Moderator (and the External Moderators if necessary).
20. Only memoranda bearing the signatures of the National Internal Moderator and the UMALUSI moderators and distributed by the National Department of Basic Education via the Provinces must be used in the training of markers and in the marking.

P. Preethlall
UMALUSI



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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	A✓✓		
	1.1.7	D✓✓		
	1.1.8	D✓✓		
	1.1.9	C✓✓		
	1.1.10	C✓✓	(10 x 2)	(20)
1.2	1.2.1	Antibiotic✓		
	1.2.2	Species✓		
	1.2.3	Extinction✓		
	1.2.4	Foramen magnum✓		
	1.2.5	Alleles✓		
	1.2.6	Haploid✓		
	1.2.7	Cloning✓		(7)
1.3	1.3.1	Both A and B ✓✓		
	1.3.2	A only ✓✓		
	1.3.3	None✓✓		
	1.3.4	B only✓✓		
	1.3.5	B only✓✓		
	1.3.6	+✓✓(any/no answer)		
	1.3.7	Both A and B ✓✓		
	1.3.8	Both A and B ✓✓	(8 x 2)	(16)
1.4	1.4.1	Incomplete✓ dominance		(1)
	1.4.2	(a) RR✓✓/C ^R C ^R		(2)
		(b) RW✓✓/C ^R C ^W		(2)
		(c) WW✓✓/C ^W C ^W		(2)
				(7)

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

2.1 2.1.1

P ₁ /parent	phenotype	Father Normal	x	Mother Normal ✓
	genotype	X ^H Y	x	X ^H X ^h ✓
Meiosis				
G/gametes		X ^H , Y	x	X ^H , X ^h ✓
Fertilisation				
F ₁ /offspring	genotype	X ^H X ^H , X ^H X ^h , X ^H Y, X ^h Y ✓		
	phenotype	2 normal daughters, 1 normal son, 1 son with haemophilia ✓		

Gametes	X ^H	X ^h
X ^H	X ^H X ^H	X ^H X ^h
Y	X ^H Y	X ^h Y

OR

1 mark for correct gametes
1 mark for correct genotypes

Max (6)

2.1.2 25% ✓ chance / 1 ✓ out of 4 ✓ / 1/4 ✓ (2)

2.1.3 The male has only one X chromosome ✓ Y chromosome does not have the allele for this trait ✓

OR

If he had 'h' he would be a sufferer ✓, therefore he must have had 'H' ✓.

Max (2)
(10)

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2.2 2.2.1 **Disadvantages of genetic engineering**

- Expensive✓
- May be difficult for poor people to access ✓
- Interfere with nature✓
- Immoral✓/ we cannot play God
- Domination of the world food products by only a few companies ✓
- Loss of biodiversity✓
- Potential health impacts✓
- Violation of natural organism's intrinsic value✓(right to independent existence)
- Unsure of long term effects✓
- Genes from transgenic organisms could escape✓and be transferred to wild organisms

(Mark first THREE only)

Any 3

(3)

2.2.2 **Advantages of genetic engineering**

- Production of medication✓
- Production of resources cheaply✓
- Control pests with specific genes inserted into the crop✓
- Selecting the best genes to produce better resistant crops✓
- Using specific genes to increase crop yields✓ / food security
- Selecting genes to increase shelf life of plant products✓
- Selecting genes that may increase maturation times✓ to meet the demand
- Selecting genes that may decrease maturation times✓ to meet the demand
- Using specific genes to improve nutritional value✓of food for better health
- Improve the taste✓ of food
- DNA and proteins of transgenic organisms unlikely to cause problems ✓/ transgenic organisms do not survive easily in wild
- Produce organisms that can clean up pollution✓
- Endangered species can be saved✓
- Increases genetic variation✓

(Mark first THREE only)

Any 3

(3)

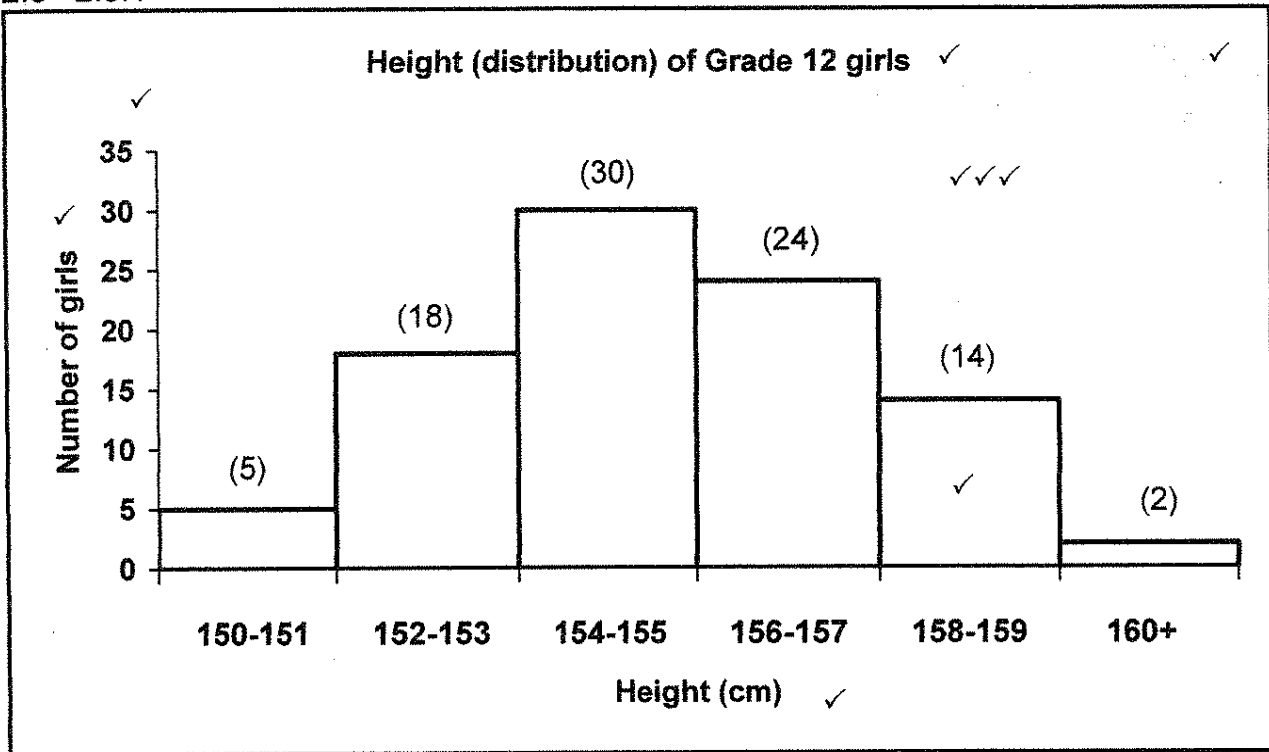
(6)

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2.3 2.3.1



Rubric for the mark allocation of the graph

Correct type of graph	1
Title of graph	1
Correct label and units for X-axis	1
Correct label for Y-axis	1
Appropriate width of bars	1
Appropriate scale for Y-axis	1
Drawing of the bars	1: 1 to 3 bars plotted correctly 2: 4 to 5 bars plotted correctly 3: All 6 bars plotted correctly

(9)

NOTE: If the wrong type of graph is drawn: marks will be lost for

- correct type of graph - 1 mark
- appropriate width of bars - 1 mark (except if a bar graph is drawn)
- drawing of bars – 3 marks

If labels of the axes are transposed then marks will be lost be for:

- correct labels for axes – 2 marks
- drawing of bars – 3 marks

2.3.2 Polygenic inheritance ✓ / polygeny (1)

2.3.3 Polygenic: Genes at different/multiple loci ✓
One gene: Gene at one locus ✓
OR
Polygenic: Has a range of intermediate ✓ phenotypes for the trait/
continuous variation
One gene: Has distinct ✓ phenotypic traits/discrete/discontinuous
variation (2)

2.3.4 -Environmental factors ✓ / Nutrition
-Sex ✓ / Gender
-Age ✓
-Medical conditions ✓
(Mark first TWO only)

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Any 2 (2)
(14)
[30]

QUESTION 3

- 3.1 3.1.1 (a) *Pan troglodytes* ✓ /chimpanzee/C
 (b) *Homo erectus* ✓ /A
 (c) *Homo sapiens* ✓ /B

OR

- (a) *Homo erectus* ✓ /A
 (b) *Pan troglodytes* ✓ /chimpanzee/C
 (c) *Homo sapiens* ✓ /B

(3)

3.1.2

DIAGRAM A/ <i>Homo erectus</i>	DIAGRAM B/ <i>Homo sapiens</i>
1 Small cranium/brain ✓	1 Large cranium/brain ✓
2 Less rounded cranium/skull/flatter forehead ✓	2 More rounded cranium/ skull/ forehead ✓
3 Prognathus ✓ / protruding jaws	3 Not prognathus ✓
4 No obvious chin ✓	4 Pronounced chin ✓
5 Eyebrow ridges visible ✓	5 Eyebrow ridges less visible ✓
6 Eyes face forward ✓	6 Eyes to the side ✓
7 More developed cheekbone/zygomatic arch ✓	7 Less developed cheek bone/ zygomatic arch ✓
8 Bigger lower jaw ✓	8 Slightly smaller lower jaw ✓

(Mark first THREE only)

1 mark for table + (3 x 2)

(7)
(10)

- 3.2
- The oldest fossils ✓ of Australopithecines ✓ /*Homo habilis*/ bipedal have only been found in Africa
 - The oldest fossils ✓ of *Homo erectus* ✓ have been found only in Africa
 - Analysis of mitochondrial DNA ✓ shows that the oldest female ancestors of humans ✓ are from Africa
 - Analysis of Y chromosome ✓ shows that the oldest male ancestors of humans ✓ are from Africa

(Mark first TWO only)

Any 2 x 2

(4)

- 3.3 3.3.1 More/fewer ✓ dark peppered moths ✓ / pale peppered moths survive in the polluted /unpolluted environment ✓ than in the unpolluted / polluted environment

OR

No difference ✓ in the number of dark/ pale peppered ✓ moths that survive in both environments ✓

Max

(3)

- 3.3.2 - Was not a closed system so moths could fly in and out of the environment ✓ / migration may have taken place
 - The number of predators might have been different in both polluted and unpolluted environment ✓
 - Both environments could have been different with regard to vegetation found in them ✓
 - Both environments could have been different with regard to climatic conditions ✓
 - Human error in sampling ✓ / counting / recording / no repeats
(Mark first THREE only) Any 3 (3)

- 3.3.3 - Variation in the moth population produces dark and pale forms ✓
 - The dark moths were camouflaged by black tree trunks ✓ / not easily detected by birds / predators
 - More dark moths survived ✓ / able to reproduce / fewer eaten by birds
 - Pale moths were NOT camouflaged by the black tree trunks ✓ / easily detected by birds
 - Fewer pale moths survived ✓ / fewer able to reproduce / more eaten by birds
 Max (4)
 (10)

- 3.4 - There is variation in a population ✓
 - ***Population occupies the same area ✓ / No geographical barrier**
 - ***They may separate into different groups / different niches due to differences in behavioural patterns ✓ / feeding habits / due to polyploidy**
 - Each group undergoes natural selection independently ✓ and develops differently ✓
 - Genotypically ✓ and phenotypically ✓
 - Gene flow ✓ / reproduction between the different populations does not occur
 - The differences that develop between the different populations prevent them from inter-breeding ✓ even if they were to mix
 - Such that each group becomes a new species ✓ (6)
 Max 4 + 2* (compulsory marks) [30]

TOTAL SECTION B: 60

SECTION C**QUESTION 4**

- 4.1 4.1.1 DNA✓ (1)
- 4.1.2 1 Phosphate✓
2 Deoxyribose✓ sugar
3 Thymine ✓/T (3)
- 4.1.3 Nucleotide✓ (1)
(5)
- 4.2 4.2.1 Process by which the DNA of a person/organism is mapped✓/
DNA sequence of an individual is determined/barcode pattern of
DNA (1)
- 4.2.2 - Suspect was framed✓ by leaving DNA evidence at the
scene✓/swopping specimens at the lab
- Human error✓ during DNA profiling process✓
- Suspect had an identical twin✓ who has the same DNA profile✓
- The DNA evidence of the accused was at the scene✓ before✓
the crime was committed
(Mark first TWO only) Any 2 x 2 (4)
(5)
- 4.3 4.3.1 - DNA codes✓ for a particular protein✓/polypeptide/amino acid
sequence
- One strand is used as a template ✓
- To form mRNA✓
- DNA cannot leave nucleus✓ Any (4)
- 4.3.2 GCC✓ AUA✓ GGA✓ (in sequence) (3)
- 4.3.3 Glycine✓ Proline✓ Serine✓ (in sequence) (3)
(10)

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4.4 Possible answer**Crossing – over ✓**

- Homologous chromosomes ✓ /bivalents pair up
- Each chromosome has 2 chromatids ✓
- Chromatids overlap/cross over ✓
- Points at which crossing-over takes place are referred to as chiasmata ✓
- Genetic material is exchanged ✓ between non-sister chromatids ✓
- After the process of crossing-over chromosomes have genes from its homologous partner ✓
- This means that each gamete formed will have a mix of genes from maternal and paternal parents ✓
- Brings about variation in the gametes ✓ formed and also the offspring **Max (5)**

Random arrangement of chromosomes at the equator ✓

- Each pair of homologous chromosomes ✓ may line up either way on the equator of the spindle ✓
- Independently of what the other pairs are doing ✓ / independent assortment
- This means that gametes will have differing number/mix of maternal and paternal chromosomes ✓ **Max (3)**

Down's syndrome

- In meiosis I ✓ the chromosome pair 21 does not separate ✓ or
- In meiosis II ✓ the chromatids of chromosome 21 do not separate ✓ / centromere does not divide
- Referred to as non-disjunction ✓
- One gamete will have an extra copy of **chromosome number 21** ✓ / two copies of chromosome number 21
- If this gamete fuses with a normal gamete ✓ / gamete with 23 chromosomes
- The resulting zygote will have 3 copies ✓ of chromosome number 21 instead of 2 / zygote has 47 chromosomes leading to Down's syndrome

Max (4)**Polyploidy**

- During meiosis I ✓
- There is a lack of separation of ALL homologous chromosomes ✓ / non-disjunction
- One gamete will inherit the diploid set of chromosomes ✓
- When a diploid gamete is fertilized by a normal haploid gamete ✓
- The zygote/offspring will have 3 sets of chromosomes ✓ / triploid
- In the similar way, tetraploid and other polyploid offspring could be formed ✓ **Max (3)**

Advantages of polyploidy in agriculture

- Forms seedless ✓ varieties of fruit such as watermelons/bananas/some apples
- Polyploidy cells are bigger ✓ / produce larger flowers/fruits/storage organs
- Infertile plants become fertile ✓ e.g. wheat
- Plants may be more healthy ✓ / resistant to diseases **Max (2)**

Content (17)

P.B. MAJOZI External Moderator (Umalusi)
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P. Preethlall
LMALUSI

A.A. CROWE
EXTERNAL MODERATOR

Please turn over

Life Sciences/P1 (Version 1) (Full-time)

12

DBE November 2011


NSC – Memorandum

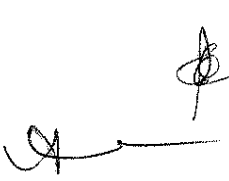
ASSESSING THE PRESENTATION OF THE ESSAY


Marks	Descriptions
3	Well structured – demonstrates insight and understanding of question
2	Minor gaps or irrelevant information in the logic and flow of the answer
1	Attempted but with significant gaps and irrelevant information in the logic and flow of the answer
0	Not attempted/nothing written other than question number/ no relevant information

Synthesis (3)
(20)

TOTAL SECTION C: 40
GRAND TOTAL: 150


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UMALUSI
29/11/2011


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EXTERNAL MODERATOR
29/11/2011


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29/11/11



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NASIONALE
SENIOR SERTIFIKAAT**

GRAAD 12

LEWENSWETENSKAPPE V1

WEERGAWE 1 (NUWE INHOUD) VIR VOLTYDSE KANDIDATE

NOVEMBER 2011

FINALE MEMORANDUM – 29/11/2011

PUNTE: 150

DEPARTMENT OF BASIC
EDUCATION

2011 -11- 10

PRIVATE BAG X 110
PRETORIA 0001

PUBLIC EXAMINATIONS

[Signature]

INT MOD
29/11/2011

[Signature]

P. Preethfall
UMALUSI
29/11/2011

Hierdie memorandum bestaan uit 12 bladsye.

P.B. MAJOZI
External Moderator
(Umalusi)

[Signature]
A.A. CROWE
EXTERNAL MODERATOR

29/11/2011

[Signature]
29/11/11
Blaai om asseblief

BEGINSELS MET BETREKKING TOT NASIEN VAN LEWENSWETENSKAPPE 2011

1. **Indien meer inligting as die puntetoekenning gegee word**
 Hou op nasien nadat die maksimum punte verkry is en trek 'n kronkellyn en dui 'maks' punte in die regterkantse kantlyn aan.
2. **Indien, by voorbeeld drie redes vereis en vyf word gegee.**
 Merk net die eerste drie ongeag daarvan of almal of sommige korrek/nie korrek is nie.
3. **Indien die hele proses beskryf word terwyl slegs 'n deel vereis word**
 Lees alles en krediteer die relevante dele.
4. **Indien vergelykings vereis, maar beskrywings word gegee**
 Aanvaar indien die verskille/ooreenkomste duidelik is.
5. **Indien tabulering vereis word en paragrawe word gegee**
 Kandidate sal punte verbeur indien nie getabuleer nie.
6. **As geannoteerde diagramme aangebied in plaas van beskrywings wat vereis word**
 Kandidate sal punte verbeur.
7. **Indien vloiediagramme i.p.v beskrywings aangebied word**
 Kandidate sal punte verbeur.
8. **Indien die volgorde vaag en skakelings nie sin maak nie**
 Krediteer waar volgorde en skakelings korrek is. Waar volgorde en skakelings nie korrek is nie, moenie krediteer nie. As die volgorde weer korrek is, gaan voort om te krediteer.
9. **Onherkenbare afkortings**
 Aanvaar indien dit aan begin van antwoord omskryf is. Indien dit nie omskryf is nie, moenie die onherkenbare afkorting krediteer nie, maar krediteer die res van die antwoord indien dit korrek is.
10. **Verkeerd genommer**
 Indien die antwoorde die regte volgorde van die vrae pas, is dit aanvaarbaar.
11. **Indien die taal wat gebruik word die bedoelde betekenis verander**
 Moenie aanvaar nie.
12. **Spelfoute**
 Aanvaar as dit herkenbaar is, met die voorbehoud dat dit nie iets anders in Lewenswetenskappe beteken nie of as dit buite konteks is.
13. **Indien gewone name gegee word in terminologie**
 Aanvaar, indien dit by die Nasionale memobespreking aanvaar is.

P.B. MAJOZI
 External Moderator
 (Umalusi)

Blaai om asseblief

14. **Indien slegs letter vereis word en slegs die naam word gegee (en andersom)**
Geen krediet.
15. **As eenhede van mate nie aangedui word**
Memorandum sal afsonderlike punte vir eenhede aandui, behalwe waar dit in vraag gegee is.
16. **Wees sensitief vir die betekenis van die antwoord, wat soms op verskillende maniere aangebied kan word**
17. **Opskrif.** Alle illustrasies (soos diagramme, tekeninge, grafieke, tabelle, ens.) moet van 'n opskrif voorsien word, behalwe waar dit in vraag gegee is.
18. **Vermenging van amptelike tale (terme en konsepte)**
Slegs 'n enkele woord of twee wat in enige ander amptelike taal anders as die leerder se assesseringstaal waarin die meeste van sy/haar antwoorde aangebied word, moet gekrediteer word, indien dit korrek is. 'n Nasionale wat in die relevante amptelike taal vaardig is, behoort geraadpleeg te word. Dit geld vir alle amptelike tale.
19. **Geen veranderinge mag aan die goedgekeurde memorandum aangebring word nie.** In uitsonderlike gevalle sal die Provinsiale Interne Moderator, met die Interne Eksterne Moderator beraadslaag (en die Eksterne Moderator waar nodig)
20. **Slegs memorandums wat die handtekening van die Nasionale Interne moderator en UMALUSI moderatore bevat en deur die Nasionale Departement van Basiese Onderwys versprei word, mag gebruik word tydens opleiding en tydens die nasienperiode.**

P.B. MAJOLA
External Moderator



AFDELING A**VRAAG 1**

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	A✓✓		
	1.1.7	D✓✓		
	1.1.8	D✓✓		
	1.1.9	C✓✓		
	1.1.10	C✓✓	(10 x 2)	(20)
1.2	1.2.1	Antibiotika✓		
	1.2.2	Spesie✓		
	1.2.3	Uitwissing✓/ Uitsterwing		
	1.2.4	Foramen magnum✓		
	1.2.5	Allele✓		
	1.2.6	Haploïede✓		
	1.2.7	Kloning✓		(7)
1.3	1.3.1	Beide A en B ✓✓		
	1.3.2	Slegs A ✓✓		
	1.3.3	Geeneen✓✓		
	1.3.4	Slegs B ✓✓		
	1.3.5	Slegs B ✓✓		
	1.3.6	+✓✓ (enige/geen antwoord)		
	1.3.7	Beide A en B ✓✓		
	1.3.8	Beide A en B ✓✓	(8 x 2)	(16)
1.4	1.4.1	Onvolledige ✓ dominansie		(1)
	1.4.2	(a) RR✓✓/C ^R C ^R		(2)
		(b) RW ✓✓/C ^R C ^W		(2)
		(c) WW✓✓/C ^W C ^W		(2)
				(7)

TOTAAL AFDELING A: 50

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Blaai om asseblief

AFDELING B

VRAAG 2

2.1 2.1.1

P₁/ouer
 fenotipe Normaal x Normaal ✓
 genotipe X^HY x X^HX^h ✓

Meiose
 G/gamete X^H, Y x X^H, X^h ✓

Bevrugting

F₁/nageslag
 genotipe X^HX^H, X^HX^h, X^HY, X^hY ✓
 fenotipe 2 normale dogters, 1 normale seun, 1 seun met hemofilie ✓

OF

Gamete	X ^H	X ^h
X ^H	X ^H X ^H	X ^H X ^h
Y	X ^H Y	X ^h Y

1 punt vir korrekte gamete
 1 punt vir korrekte genotipes

Maks (6)

2.1.2 25% kans / 1 uit 4 ¼ (2)

2.1.3 Die man het net een X-chromosoom Y-chromosoom het nie die alleel vir hierdie eienskap nie ✓

OF

As hy 'h' gehad het, was hy 'n lyster, daarom moes hy 'H' gehad het ✓.

Maks (2)
(10)

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EXTERNAL MODERATOR

Blaai om asseblief

2.2 2.2.1 Nadele van genetiese modifikasie

- Duur✓
- Kan moeilik wees vir arm mense om toegang te verkry ✓
- Meng in met die natuur✓
- Immoreel/ons kan nie God speel nie
- Dominering van wêreldvoedselprodukte deur slegs 'n paar maatskappye ✓
- Verlies aan biodiversiteit✓
- Potensiële gesondheidsimpakte✓
- Skending van natuurlike organisme se intrinsieke waarde✓ (reg om onafhanklik te bestaan)
- Onseker van langtermyneffekte✓
- Gene uit transgenetiese organismes kan ontsnap✓ en aan wilde organismes oorgedra word

(Sien slegs eerste DRIE na)

Enige 3 (3)

2.2.2 Voordele van genetiese modifikasie

- Produksie van medikasie✓
- Produseer hulpbronne goedkoop✓
- Beheer peste met spesifieke gene wat by die oes gevoeg word✓
- Kies die beste gene om oeste te produseer, wat beter weerstand bied✓
- Gebruik spesifieke gene om oesopbrengs te vergroot✓ / voedselsekuriteit
- Kies gene om raklewe van plantprodukte te verhoog✓
- Kies gene wat die rypwording vertraag ✓ om in die vraag te voorsien
- Kies gene wat die rypwording vervroeg✓ om in die vraag te voorsien
- Gebruik spesifieke gene om die voedingswaarde van voedsel te verbeter✓ vir beter gesondheid
- Verbeter die smaak ✓ van voedsel
- DNS/DNA en proteïene van transgenetiese organisme sal onwaarskynlik probleme veroorsaak ✓ / Transgenetiese organismes oorleef nie maklik in die natuur
- Produseer organismes wat besoedeling kan opruim✓
- Bedreigde spesies kan bewaar word ✓
- Verhoog genetiese variasie✓

(Sien slegs eerste DRIE na)

Enige 3 (3)
(6)

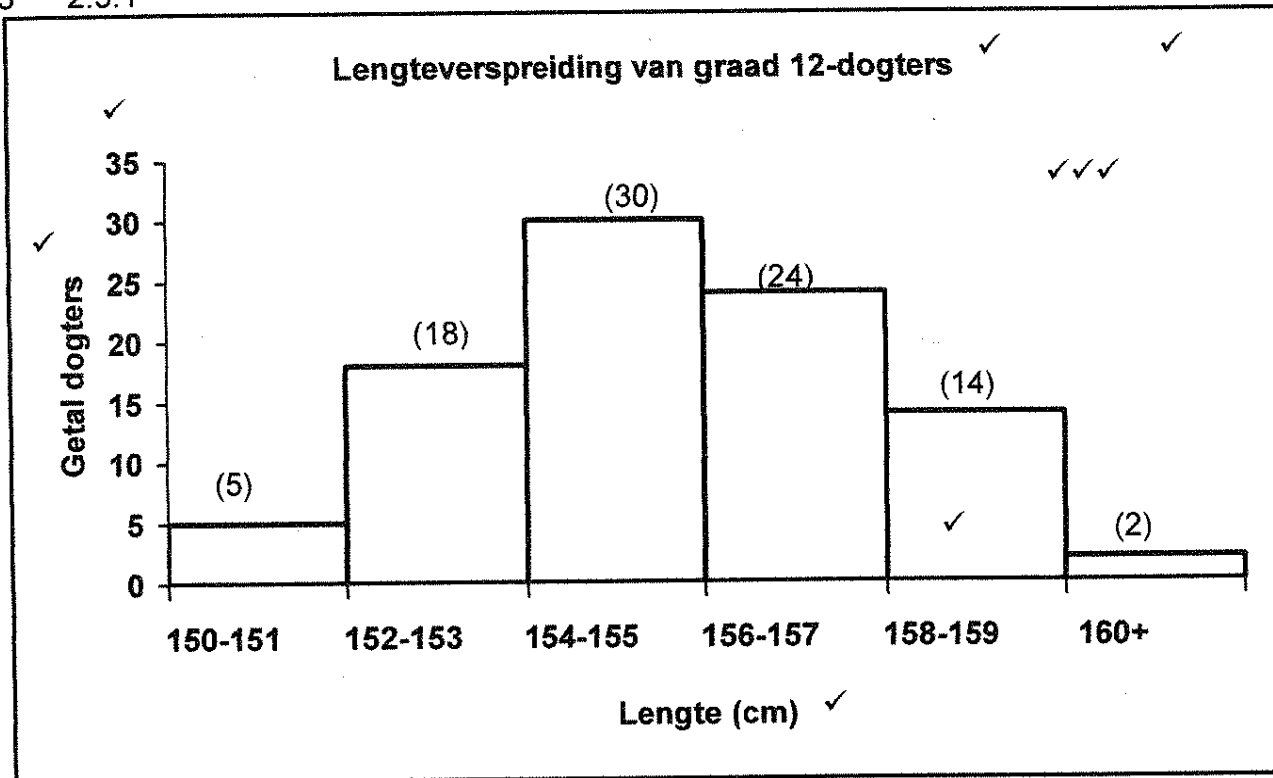
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Blaai om asseblief

2.3 2.3.1



Rubriek vir die punttoekenning van die grafiek

Korrekte tipe grafiek	1
Titel van grafiek	1
Korrekte byskrif en eenheid vir X-as	1
Korrekte byskrif vir Y-as	1
Geskikte breedte kolomme	1
Geskikte skaal vir Y-as	1
Teken van kolomme	1: 1 tot 3 kolomme korrek gestip 2: 4 tot 5 kolomme korrek gestip 3: Al 6 kolomme korrek gestip

(9)

LET WEL: As die verkeerde tipe grafiek gestip is, sal punte verbeur word vir:

- 'Korrekte tipe grafiek' – 1 punt
 - 'Geskikte breedte en interval van kolomme – 1 punt (behalwe as kolomgrafiek geteken is)
 - 'Teken van kolomme' – 3 punte
- As byskrifte omgekeer is: sal punte verbeur word vir:
- Regte opskrifte vir asse – 2 punte
 - Teken van kolomme – 3 punte

2.3.2 Poligeniese oorerwing ✓ / poligenie (1)

2.3.3 Poligenies: Gene by verskillende/meervoudige lokusse ✓
Een geen: Geen by een lokus ✓

OF

Poligenies: Het 'n reeks/veelvuldige /intermediêre ✓ fenotipes vir die eienskap/ deurlopende variasie/kontinu
Een geen: Het kenmerkende ✓ fenotipiese eienskappe/eksakte /nie-deurlopende/afsonderlike/diskontinu variasie (2)

2.3.4 -Omgewingsfaktore ✓ / Voeding
-Geslag ✓
-Ouderdom ✓
-Mediese kondisies ✓
(Sien slegs eerste TWEE na)

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(2)

(14)

[30]

Enige 2

Blaai om asseblief

VRAAG 3

- 3.1 3.1.1 (a) *Pan troglodytes* ✓ /sjimpansee/C (3)
(b) *Homo erectus* ✓ /A
(c) *Homo sapiens* ✓ /B

OF

- (a) *Homo erectus* ✓ /A
(b) *Pan troglodytes* ✓ /sjimpansee/C
(c) *Homo sapiens* ✓ /B (3)

3.1.2

DIAGRAM A/ <i>Homo erectus</i>	DIAGRAM B/ <i>Homo Sapiens</i>
1 Klein kranium/brein ✓	1 Groot kranium/brein ✓
2. Minder geronde kranium/ skedel/platter voorkop ✓	2. Meer geronde kranium/ skedel/voorkop ✓
2 Prognaat ✓ /Uitstaande kaak	2 Nie prognaat ✓ /Nie uitstaande kaak/
3 Geen duidelike ken nie ✓	3 Uitstaande ken ✓
4 Oogbankriwwe sigbaar ✓	4 Oogbankriwwe minder sigbaar ✓
5 Oë kyk vorentoe ✓	5 Oë kyk na die kante toe ✓
6 Meer ontwikkelde wangbeen ✓ /sigometriese boog	6 Minder ontwikkelde wangbeen ✓ / sigometriese boog
7 Groter onderkaak ✓	7 Effens kleiner onderkaak ✓

(Sien slegs eerste DRIE na)

1 punt vir tabel + (3 x 2)

(7)
(10)

- 3.2 - Die oudste fossiele ✓
van Australopithecines ✓ /*Homo habilis*/ tweevoetig is gevind in Afrika.
- Die oudste fossiel ✓ van *Homo erectus* ✓ is gevind in Afrika
- Analise van mitochondriese DNS ✓ /DNA bevestig dat oudste vroulike voorouer ✓ van die mens is van Afrika
- Analise van Y-chromosoom ✓ bevestig dat oudste manlike voorouer ✓ van die mens is van Afrika

(Sien slegs eerste TWEE na)

Enige 2 x 2

(4)

- 3.3 3.3.1 Meer/Minder ✓ donker peper-motte ✓ /ligte peper-motte oorleef in die besoedelde/onbesoedelde omgewing ✓ as in die onbesoedelde /besoedelde omgewing

OF

Geen verskil ✓ in die getal donker/ligte peper- ✓ motte wat in beide omgewings oorleef nie ✓

Maks

(3)

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Blaai om asseblief

- 3.3.2
- Was nie 'n geslote stelsel nie so motte kon in en uit die omgewing vlieg✓/migrasie kon plaasvind
 - Die aantal roofdiere kon verskillend in beide besoedelde en onbesoedelde omgewings gewees het✓
 - Beide omgewings kon verskillend gewees het m.b.t. die plantegroei daarin gevind.✓
 - Beide omgewings kon verskillend gewees het m.b.t. die klimaatstoestand.✓
 - Menslike fout in versameling✓/tel/rekordering/geen herhalings
(Sien slegs eerste DRIE na) Enige 3 (3)

- 3.3.3
- Variasie in die motbevolking produseer donker en ligte vorms✓
 - Die donker motte is kamoefleer deur swart boomstamme✓/word nie maklik deur voëls/jagdiere raakgesien nie
 - Meer donker motte oorleef✓/reproduseer/ minder deur voëls geëet
 - Ligte motte is NIE gekamoefleer deur die swart boomstamme nie ✓/maklik deur voëls raakgesien.
 - Minder ligte motte het oorleef✓/minder instaat om te reproduseer/meer deur voëls geëet
- Maks (4)
(10)

- 3.4
- Daar is variasie in 'n bevolking✓
 - ***Bevolkings in dieselfde gebied maar verdeel in verskillende groepe✓ /geen geografiese hindernis**
 - ***Hulle verdeel in verskillende groepe/verskillende nis as gevolg van verrskillende gedragpatrone✓ / voedingswyses/poliploidie**
 - Elke groep ondergaan natuurlike seleksie op onafhanklike wyse✓ en ontwikkel verskillend✓
 - Genotipies✓ en fenotipies✓
 - Geen vloeï ✓/voortplanting tussen die verskillende bevolkings vind nie plaas nie
 - Die verskille wat ontwikkel tussen die verskillende bevolkings voorkom kruisteelt ✓selfs al sou hulle meng
 - So dat elke groep 'n nuwe spesie word✓
- Maks 4+2*(verpligte punt) (6)
[30]

TOTAAL AFDELING B: 60

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AFDELING C

VRAAG 4

- 4.1 4.1.1 DNS/DNA✓ (1)
- 4.1.2 1 Fosfaat✓
2 Deoksiribose✓suiker
3 Timien ✓T (3)
- 4.1.3 Nukleotied✓ (1)
(5)
- 4.2 4.2.1 Proses waardeur die DNS/DNA van 'n persoon gekarteer word✓/
DNS/DNA-volgorde van 'n individu word bepaal/stafiekode van
DNA (1)
- 4.2.2 - Die beskuldigde is geïnkrimineer✓ deur DNA bewyse by te toneel
te laat✓/Omrui van monsters by die laboratories
- Menslike fout✓ tydens DNS/DNA-profielsamestellingsproses✓
- Die beskuldigde het 'n identiese✓ tweeling met die selfde DNA
profiel✓ (4)
- Die DNS/DNA bewyse van die beskuldige was op die toneel✓ (5)
voor ✓ die daad gepleeg is.
(Sien slegs eerste TWEE na) Enige 2 x 2
- 4.3 4.3.1 - DNS/DNA-kodes✓ vir 'n spesifieke proteïene✓/polipeptiede/
volgorde van die aminosure
- Een string word as templaar gebruik✓
- Om bRNS/mRNA te vorm
- DNA kan nie nukleus verlaat nie ✓ Enige 4 (4)
- 4.3.2 GCC✓ AUA✓ GGA✓ (in volgorde) (3)
- 4.3.3 Glisien✓ Prolien✓ Serien✓ (in volgorde) (3)
(10)

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4.4 Moontlike antwoord**Oorkruising** ✓

- Homoloë chromosome ✓ /bivalentes weerskante van ewenaar
- Elke chromosoom het 2 chromatiedes ✓
- Chromatiede oorvleuel/oorkruis ✓
- Punte waar oorkruising plaasvind word chiasmata ✓ genoem
- Genetiese materiaal word uitgeruil ✓ tussen nie-suster-chromatiedes ✓
- Na die oorkruisingsproses het chromosome gene van sy homoloë maat ✓
- Dit beteken dat elke gameet gevorm 'n mengsel van gene van moederskant en vaderskant sal hê ✓
- Gee variasie in gamete ✓ gevorm en ook die nageslag

Maks (5)**Willekeurige rangskikking van chromosome by die ewenaar** ✓

- Elke paar homoloë chromosome ✓ kan aan weerskante van die ewenaar van die spoel rangskik ✓
- Onafhanklik van wat die ander paar doen ✓ /onafhanklike rangskikking
- Dit beteken dat gamete 'n verskillende aantal/mengsel van materiaal van moeder- en vader-chromosome sal hê ✓

Maks (3)**Down se sindroom**

- In Meiose I ✓ verdeel die chromosoom paar 21 nie ✓ of
- In Meiose II ✓ verdeel die chromatiede van chromosoom 21 nie ✓ /sentromeer verdeel nie
- Word na verwys as nie-disjunksie ✓ /nie-verdeling
- Een gameet sal 'n ekstra **chromosome 21 hê** ✓ /twee 21 chromosome hê
- As hierdie gameet met 'n normale gameet versmelt ✓ /met 23 chromosome
- Die sigoot gevorm sal 'n chromosoom-'paar' 21 met 3 ✓ chromosome hê in plaas van 2 /47 chromosomes- wat lei na Down sindroom

Maks (4)**Poliploïdie**

- Gedurende meiose I ✓
- Is daar is 'n gebrek aan verdeling van ALLE homoloë chromosome ✓ /nie-delning/splitsing/ nie-disjunksie
- Een gameet sal die diploïede stel chromosome erf ✓
- Wanneer 'n diploïede gameet deur 'n normale haploïede gameet bevrug word ✓
- Sal die sigoot/nageslag 3 stelle chromosome ✓ /triploïed hê
- Op 'n soortgelyke wyse sal tetraploïede en ander poliploïede nageslag gevorm kan word ✓

Maks (3)**Voordele van poliploïdie in landbou**

- Vorm saadlose ✓ variasies van vrugte, soos waatlemoene/ piesangs/ party appels
- Poliploidieselle is groter ✓ daarom is produkte groter soos blomme/ vrugte/ stoororgane
- Onvrugbare plante raak vrugbaar, ✓ bv. Koring
- Maak plant meer gesond ✓ /meer weerstandig teen siektes

**Maks (2)
Inhoud (17)**

Lewenswetenskappe/V1 (Weergawe 1) (Voltyds) 12
NSS – Memorandum


DBE/November 2011

ASSESSERING VAN DIE AANBIEDING VAN DIE OPSTEL

Punte	Beskrywings
3	Goed gestruktureer – demonstreer insig en begrip van vraag
2	Klein gapings of irrelevante inligting in die logika en vloei van die antwoord
1	Poging aangewend maar met betekenisvolle gapings met irrelevante inligting in die logika en vloei van die antwoord
0	Nie gepoog nie/Niks behalwe vraagnommer neergeskryf nie/geen relevante inligting

Sintese (3)
(20)

TOTAAL AFDELING C: 40
GROOTTOTAAL: 150


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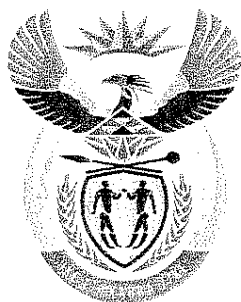

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29/11/2011

Life Sciences/P2 (Version 1) (Full-time)

NSC – Memorandum

DBE/November 2011



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

DEPARTMENT OF BASIC EDUCATION

2011 -12- 01
PRIVATE BAG X 110
PRETORIA 0001

PUBLIC EXAMINATIONS

GRADE 12

LIFE SCIENCES P2

VERSION 1 (NEW CONTENT) FOR FULL-TIME CANDIDATES

NOVEMBER 2011

FINAL MEMORANDUM – 01/12/2011

MARKS: 150

INT MOD
01/12/2011

This memorandum consists of 11 pages.

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01/12/11

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01/12/2011

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01/12/11

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2011

1. **If more information than marks allocated is given**
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right hand margin.
2. **If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **If whole process is given when only part of it is required**
Read all and credit relevant part.
4. **If comparisons are asked for and descriptions are given**
Accept if differences / similarities are clear.
5. **If tabulation is required but paragraphs are given**
Candidates will lose marks for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**
Candidates will lose marks
7. **If flow charts are given instead of descriptions**
Candidates will lose marks.
8. **If sequence is muddled and links do not make sense**
Where sequence and links are correct, credit. Where sequence and links is incorrect, do not credit. If sequence and links becomes correct again, resume credit.
9. **Non-recognized abbreviations**
Accept if first defined in answer. If not defined, do not credit the unrecognized abbreviation but credit the rest of answer if correct.
10. **Wrong numbering**
If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.
11. **If language used changes the intended meaning**
Do not accept.
12. **Spelling errors**
If recognizable accept provided it does not mean something else in Life Sciences or if it is out of context.
13. **If common names given in terminology**
Accept provided it was accepted at the national memo discussion meeting.

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14. **If only letter is asked for and only name is given (and vice versa)**
No credit
15. **If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately
16. Be sensitive to the **sense of an answer, which may be stated in a different way.**
17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.
19. No changes must be made to the marking memoranda without consulting the Provincial Internal Moderator who in turn will consult with the national Internal Moderator (and the External Moderators where necessary)
20. Only memoranda bearing the signatures of the National Internal Moderator and the UMALUSI moderators and distributed by the national Department of Basic Education via the provinces must be used during training and during the marking period.

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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	B✓✓		
	1.1.4	C✓✓		
	1.1.5	C✓✓		
	1.1.6	C✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	D✓✓	(10 x 2)	(20)
1.2	1.2.1	Vasodilation✓		
	1.2.2	Ecological succession✓		
	1.2.3	Immigration✓		
	1.2.4	Niche✓		
	1.2.5	Hyperthermia✓		
	1.2.6	Hypothalamus✓		
	1.2.7	+✓ (accept any answer/ no answer)		
	1.2.8	Pollination✓	(8 x 1)	(8)
1.3	1.3.1	A only✓✓		
	1.3.2	none ✓✓		
	1.3.3	none✓✓		
	1.3.4	B only✓✓		
	1.3.5	A only✓✓		
	1.3.6	A and B✓✓	(6 x 2)	(12)
1.4	1.4.1	(a) C ✓		(1)
		(b) B ✓		(1)
		(c) A ✓		(1)
		(d) B ✓		(1)
		(e) C✓ /D		(1)
				(5)
1.5	1.5.1	C – Petal ✓/corolla		
		D – Anther✓		
		E – Stigma✓		(3)
	1.5.2	B✓		(1)
	1.5.3	B✓		(1)
				(5)

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

- 2.1 2.1.1 A – Tympanic membrane✓/ Tympanum/Eardrum
C – Oval window✓/fenestra ovalis
D – Round window✓/fenestra rotunda (3)
- 2.1.2 B – transmit vibrations✓ from the tympanic membrane to inner ear/
amplifies sound waves
- D – prevents pressure build up of waves✓/absorbs pressure wave
set up by tympanic canal of the inner ear/eases sound waves out
of inner ear/ prevents sound waves from moving backwards in
perilymph (2)
- 2.1.3 Tympanic membrane/A has a larger surface area✓ than the oval
window✓/C (2)
- 2.1.4 Ossicles will not vibrate freely ✓
to transmit vibrations to the inner ear✓/ causing partial deafness
OR
Cannot equalise pressure ✓ on either side of tympanic membrane
leading to pain✓/ middle ear infection/ a burst eardrum / vibrations
not being transmitted/ partial deafness
Any (1 x 2) (2)
(9)
- 2.2 2.2.1 (a) 7✓ (1)
- (b) Diameter of the pupil is the largest✓, indicating dim light
conditions✓/ allowing more light to enter (2)
- 2.2.2 Since less light enters the eye
- the radial✓ muscles of the iris [contract]✓
- the circular✓ muscles of the iris [relax]✓
- causing the pupil to dilate✓/become wider/become bigger
thus allowing more light to enter any (4)
(7)
- [] = only allocate mark if linked to correct muscle

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- 2.3 2.3.1 Day 14✓/15 (1)
- 2.3.2 Day 0–6✓/day 0–7 (1)
- 2.3.3 Stimulates follicle✓/ovum development in the ovary/secretion of oestrogen (1)
- 2.3.4 An increase in progesterone level✓ inhibits the release of FSH✓
OR
FSH stimulates the development of the ovum✓ and progesterone prepares for implantation ✓when this ovum is fertilised (2)
- 2.3.5 - Corpus luteum ✓
- starts to secrete progesterone✓
- which thickens✓ the lining of the uterus wall/endometrium
Any (2)
- 2.3.6 No✓ (1)
- 2.3.7 - Corpus luteum has degenerated✓
- Progesterone level has decreased✓
- FSH level starts to rise✓
- LH level decreases✓
(Mark first TWO only) Any (2)
(10)
- 2.4 2.4.1 Moist✓ and dark✓ conditions (2)
- 2.4.2 - The other two dishes should have had dry paper✓ put in so that all the four dishes had the same paper✓/ to avoid introducing a new variable
- Test one variable at a time/light and moisture conditions separately✓ to determine which environmental factor ✓ was preferred by the woodlice
- Repeat the investigation✓ to increase reliability✓
- Ensure sufficient time✓ for the movement ✓ of the woodlice
- Use the same species✓ /sex/age of woodlice as they might behave differently✓/this avoids the introduction of a new variable
(Mark first ONE only) (Any 1 x 2) (2)
(4)
[30]

7

QUESTION 3

- 3.1 3.1.1 - Obtain permission to catch fish/use dam ✓
 - Conduct training to identify the *Tilapia sparrmanii* ✓
 - Decide when to do the investigation ✓
 - Decide on the tags ✓ /markers/apparatus to be used
 - Decide on the method of catching ✓
 - Determine the sample size ✓ /number of repeat samples
 - Determine the period between the two successive captures ✓
 - Decide on how to record the results ✓
(Mark first FOUR only) Any (4)
- 3.1.2
$$\text{Number of } \textit{Tilapia sparrmanii} (P) = \frac{(15 \times 150)}{10} \checkmark$$

$$= 225 \checkmark$$
 (3)
 (7)
- 3.2 3.2.1 Logistic ✓ growth form/S-shaped/sigmoid (1)
- 3.2.2 A = Lag ✓ /Establishment phase
 B = Exponential ✓ /Geometric/accelerating/log/logarithmic phase
 C = Equilibrium ✓ /Stationary/Stabilising/Constant phase (3)
- 3.2.3 B ✓ (1)
- 3.2.4 - Environmental resistance increased ✓
 - causing the carrying capacity of the area to be reached ✓
 - leading to increased competition ✓
 - resulting in the death rate increasing to equal the birth rate ✓
 - or resulting in increased emigration that balances with immigration ✓ Any (3)
- 3.2.5 - Population is acclimatising/adapting to its new environment ✓
 - Few pairing partners ✓
 - Time required for producing offspring is relatively long ✓
 - Not all individuals are sexually mature ✓
(Mark first TWO only) Any (2)
 (10)
- 3.3 3.3.1 Residents ✓
 Mining company ✓ /Exxaro KZN Sands
 Amakhosi and tribal leaders ✓
(Mark first THREE only) (3)

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3.3.2

Two advantages

- Creating new jobs✓
 - Job reservation/job losses prevented✓
 - Contribute to the economy of the town✓/income to municipality from tax rates will increase through businesses
 - Minerals available more cheaply✓
 - Develops infrastructure of the town✓
- (Mark first TWO only)**

Any (2)

Two disadvantages

- Health implications✓
 - Decrease of the property values of the residents✓
 - Income to municipality from tax rates will decrease✓ through decline in property value
 - Exploitation of the community✓
 - Loss in biodiversity✓
 - Increase in pollution✓
 - Environmental degradation✓
 - Conflict in the community✓
- (Mark first TWO only)**

Any (2)
(7)

3.4

3.4.1

- (a) Resource /Spatial/niche partitioning✓
- (b) Intraspecific✓ competition
- (c) Competitive exclusion ✓ principle/interspecific competition

(3)

3.4.2

- Different species ✓
- coexist in the same habitat ✓
- eating leaves of plant at different heights✓/use the resources slightly differently
- minimising competition✓

Any (3)
(6)
[30]

TOTAL SECTION B: 60

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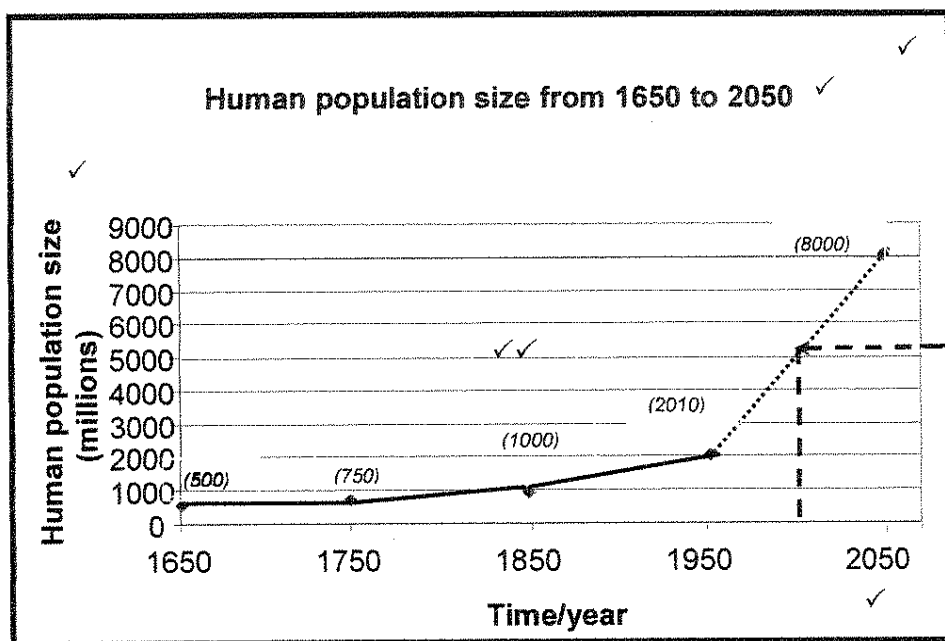

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SECTION C

QUESTION 4

4.1 4.1.1



Read value on learner's Y axis to check the answer given by the learner for Q 4.1.2

Guideline for the assessing the graph

Correct type of graph and joining of points	1
Title of graph	1
Correct label and scale x-axes	1
Correct label and scale y-axes	1
Plotting of points of line graph	1: 3 to 4 points plotted correctly 2: All 5 points plotted correctly

(6)

NOTE: If the wrong type of graph is drawn: marks will be lost for

- correct type of graph - 1 mark
- plotting of points – 2 marks

If labels of the axes are transposed then marks will be lost be for:

- correct label and scale for X and Y axes – 2 marks

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- 4.1.2 (a) Read from the learners graph
(value ✓ and for million ✓ /000 000) (2)
- (b) 200 ✓ years ✓ (2)
- 4.1.3 - To budget ✓ for infrastructure development e.g. housing
- To plan ✓ for services in the future e.g. education
- To have strategies ✓ / any example to improve the sustainability
of the environment
(Mark first TWO only) Any (2)
(12)
- 4.2 4.2.1 The cell elongation ✓ in the coleoptile
will increase ✓ / decrease / remain the same / differ
as the auxin concentration increases / decreases / differs ✓ (3)
- 4.2.2 Removing the effect of auxin ✓ produced at the tip as there can be
varying concentrations ✓ produced by each plant (2)
- 4.2.3 Type of soil ✓ / amount of water / light intensity / temperature / size of
the pot / keep environmental conditions the same (1)
- 4.2.4 Increasing the concentration of auxin results in an increase in the
cell elongation ✓
up to an optimum concentration ✓
then it starts inhibiting / decreasing the cell elongation ✓
Any (2)
(8)

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4.3

- When abnormal levels of glucose are detected✓
- by the pancreas✓,
- the Islets of Langerhans✓ secretes hormones
- into the bloodstream✓

When blood glucose level rises✓

- Insulin✓ is secreted
- to decrease the blood glucose level✓
- back to normal✓
- insulin secretion is then inhibited✓

When blood glucose level falls✓

- Glucagon✓ is secreted
- to increase the blood glucose level✓
- back to normal✓
- glucagon secretion is then inhibited✓

Any (10)

Causes of diabetes mellitus

- Inadequate secretion✓
- Non-secretion of insulin✓
- Production of defective insulin✓
- Body cells resistant to the action of insulin✓
- Inability of the cells to use glucose efficiently✓

Any (2)

Symptoms

- Glucose in the urine✓
- Frequent urination✓
- Extreme thirst✓
- Fatigue✓/lethargy/faintness
- Nausea✓/Vomiting
- Weight loss✓
- Blurred vision✓
- Non-healing of wounds✓

Any (3)

Management of diabetes mellitus

- Exercise✓
- Eating diet suitable for diabetic person✓
- Using prescribed medication/drugs ✓ for the management of diabetes mellitus

Any (2)
Content (17)

ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Descriptions
3	Well structured – demonstrates insight and understanding of question
2	Minor gaps or irrelevant information in the logic and flow of the answer
1	Significant gaps or irrelevant information in the logic and flow of the answer
0	Not attempted/nothing written other than question number/no relevant information

Synthesis (3)
(20)

TOTAL SECTION C: [40]
GRAND TOTAL: 150

[Signature]

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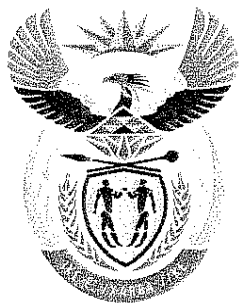
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Lewenswetenskappe V2 (Weergawe 1) (Voltyds) 1

DBE/November 2011

NSS – Memorandum



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NASIONALE SENIOR SERTIFIKAAT

DEPARTMENT OF BASIC EDUCATION
2011 -12- 01 PRIVATE BAG X 110 PRETORIA 0001
PUBLIC EXAMINATIONS

GRAAD 12

LEWENSWETENSKAPPE V2
WEERGAWE 1 (NUWE INHOUD) VIR VOLTYDSE KANDIDATE
NOVEMBER 2011
FINALE MEMORANDUM – 01/12/2011

PUNTE: 150

INT MED 01/12/2011

Hierdie memorandum bestaan uit 11 bladsye.

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01/12/2011

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U.MALUSI

01/12/2011

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01/12/11

Kopiereg voorbehou

**BEGINSELS MET BETREKING TOT NASIEN VAN
LEWENSWETENSKAPPE 2011**

1. **Indien meer inligting as die punttoekenning gegee word.**
Hou op merk nadat die maksimum punte verkry is en trek 'n kronkellyn en dui 'maks' punte in die regterkantse kantlyn aan.
2. **Indien, byvoorbeeld drie redes vereis en vyf word gegee.**
Merk net die eerste drie ongeag daarvan of almal of sommige korrek/nie korrek is nie.
3. **Indien die hele proses beskryf word terwyl slegs 'n deel vereis word.**
Lees alles en krediteer die relevante dele.
4. **Indien vergelykings vereis, maar beskrywings word gegee.**
Aanvaar indien die verskille/ooreenkomste duidelik is.
5. **Indien tabulering vereis word en paragrawe word gegee.**
Kandidate sal punte verbeur indien nie getabuleer nie.
6. **As geannoteerde diagramme aangebied word in plaas van beskrywings wat vereis word.**
Kandidate sal punte verbeur.
7. **Indien vloediagramme i.p.v beskrywings aangebied word.**
Kandidate sal punte verbeur.
8. **Indien die volgorde vaag en skakelings nie sin maak nie.**
Krediteer waar volgorde en skakelings korrek is. Waar volgorde en skakelings nie korrek is nie, moenie krediteer nie. As die volgorde weer korrek is, gaan voort om te krediteer.
9. **Nie-erkende afkortings.**
Aanvaar indien dit aan begin van antwoord omskryf is. Indien dit nie omskryf is nie, moenie die nie-erkende afkorting krediteer nie, maar krediteer die res van die antwoord indien dit korrek is.
10. **Verkeerd genommer.**
Indien die antwoorde die regte volgorde van die vrae pas, is dit aanvaarbaar.
11. **Indien die taal wat gebruik word die bedoelde betekenis verander.**
Moenie aanvaar nie.
12. **Spelfoute.**
Aanvaar as dit herkenbaar is, met die voorbehoud dat dit nie iets anders in Lewenswetenskappe beteken nie of as dit buite konteks is.
13. **Indien gewone name gegee word in terminologie.**
Aanvaar, indien dit by die nasionale memobespreking aanvaar is.

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14. **Indien slegs letter vereis word en slegs die naam word gegee (en anders om).**
Geen krediet nie.
15. **As eenhede van mate nie aangedui word nie.**
Memorandum sal afsonderlike punte vir eenhede aandui, behalwe waar dit in vraag gegee is.
16. Wees sensitief vir die **betekenis van die antwoord, wat soms op verskillende maniere aangebied kan word.**
17. **Opskrif.** Alle illustrasies (soos diagramme, tekeninge, grafieke, tabelle, ens.) moet van 'n opskrif voorsien word.
18. **Vermenging van amptelike tale (terme/konsepte).**
Slegs 'n enkele woord of twee in enige ander amptelike taal anders as die leerder se assesseringstaal waarin die meeste van sy/haar antwoorde aangebied word, moet gekrediteer word, indien dit korrek is. 'n Nasieners wat in die relevante amptelike taal vaardig is, behoort geraadpleeg te word. Dit geld vir alle amptelike tale.
19. Geen veranderinge mag aan die goedgekeurde memorandum aangebring word nie. In uitsonderlike gevalle sal die Provinsiale Interne Moderator, met die nasionale Interne Moderator beraadslaag (en die Eksterne Moderator waar nodig).
20. Slegs memorandums wat die handtekening van die Nasionale Interne Moderator en UMALUSI-moderatore bevat en deur die Departement van Basiese Onderwys via die provinsies versprei word, mag gebruik word tydens opleiding en tydens die nasienperiode.

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AFDELING A

VRAAG 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	B✓✓		
	1.1.4	C✓✓		
	1.1.5	C✓✓		
	1.1.6	C✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	D✓✓	(10 x 2)	(20)
1.2	1.2.1	Vasodilasie✓		
	1.2.2	Ekologiese suksesie✓/opeenvolging		
	1.2.3	Immigrasie✓		
	1.2.4	Nis✓		
	1.2.5	Hipertermie✓		
	1.2.6	Hipotalamus✓		
	1.2.7	+✓ (aanvaar enige of geen antwoord)		
	1.2.8	Bestuiwing✓	(8 x 1)	(8)
1.3	1.3.1	Slegs A ✓✓		
	1.3.2	Geeneen ✓✓		
	1.3.3	Geeneen ✓✓		
	1.3.4	Slegs B ✓✓		
	1.3.5	Slegs A ✓✓		
	1.3.6	A en B ✓✓	(6 x 2)	(12)
1.4	1.4.1	(a) C ✓		(1)
		(b) B ✓		(1)
		(c) A ✓		(1)
		(d) B ✓		(1)
		(e) C✓/D		(1)
				(5)
1.5	1.5.1	C – Kroonblare ✓ D – Helmknop ✓ E – Stempel✓		(3)
	1.5.2	B✓		(1)
	1.5.3	B✓		(1)
				(5)

TOTAAL AFDELING A: 50

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AFDELING B

VRAAG 2

- 2.1 2.1.1 A – Timpanum membraan/Trommelvlies/oordrom✓
C – Ovaalvenster✓
D – Rondevenster✓ (3)
- 2.1.2 B – dra vibrasies oor✓ van die timpaniese membraan na die binne-oor/versterk klankgolwe
D - voorkom opbou van golwe✓/absorbeer drukgolf deur timpaniese kanaal van die binne-oor/laat klankgolwe geleidelik uit binne-oor/voorkom dat klankgolwe terugwaarts in perilimf beweeg (2)
- 2.1.3 Timpanum membraan/A het 'n groter oppervlakte✓ as die ovaalvenster✓/C (2)
- 2.1.4 Gehoorbeentjies sal nie geredelik vibreer ✓ om vibrasies na die binne-oor oor te dra nie✓/ veroorsaak gedeeltelike doofheid✓
- OF**
- Kan nie druk aan beide kante van timpanum membraan balanseer nie✓ veroorsaak pyn✓/oordrom bars/ vibrasies nie oorgedra nie/ veroorsaak gedeeltelike doofheid/ middeloor infeksie
Enige 1 x 2 (2)
(9)
- 2.2 2.2.1 (a) 7✓ (1)
(b) Deursnee van die pupil is die grootste ✓ – wat 'n dowwe/half donker ligtoestande aandui ✓/ om meer lig toe te laat om binne te gaan (2)
- 2.2.2 - Aangesien minder lig die oog binnegaan
- die radiale/ straal spiere✓ van die iris [trek saam]✓
- die sirkel-/ kringspiere✓ van die iris [ontspan]✓
- wat veroorsaak dat die pupil verwyd✓
- wat dus meer lig laat binnegaan. Enige (4)
- [] = ken slegs punt toe indien gekoppel aan korrekte spier (7)
- 2.3 2.3.1 Dag 14✓/ 15 (1)
- 2.3.2 Dag 0–6✓ /dag 0–7 (1)
- 2.3.3 Stimuleer follikel✓/ovum ontwikkeling in die ovarium/ afskeiding van estrogen (1)

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- 2.3.4 'n Styging in progesteroonvlak ✓ inhibeer die vrystelling van FSH ✓
OF
FSH stimuleer die ontwikkeling van die ovum ✓ en progesteroon
berei voor vir implanting ✓ sodra hierdie ovum bevrug is (2)
- 2.3.5 - Corpus luteum ✓
- begin om progesteroon af te skei ✓
- wat voort gaan om die voering van die
uterusbinnewand/endomatrium te verdik ✓ Enige (2)
- 2.3.6 Nee ✓ (1)
- 2.3.7 - Corpus luteum het gedegenerer ✓
- Progesteroonvlak het gedaal ✓
- FSH-vlak begin styg ✓
- LH-vlak neem af ✓
(Merk slegs eerste TWEE) (2)
(10)
- 2.4 2.4.1 Vogtige ✓ en donker ✓ toestande (2)
- 2.4.2 - Daar moes droë papier in die ander twee bakkies geplaas
word ✓
sodat al 4 bakkies dieselfde papier het ✓ /om te verhoed dat
'n nuwe veranderlike getoets word
- Toets een veranderlike op 'n keer/lig- en vogtige toestande
apart ✓ om te bepaal watter omgewingsfaktor ✓ deur
die houtluise verkies word
- Herhaal die ondersoek ✓ om die geldigheid te verseker ✓
- Verseker voldoende tyd ✓ vir die beweging ✓ van die houtluise
- Gebruik dieselfde spesie ✓ /geslag/ouderdom van houtluise
omdat ander spesies mag verskillend reageer ✓ /dit verhoed dat
die toevoeging van 'n nuwe veranderlike (2)
(Merk slegs eerste EEN) Enige 1 x 2 (4)
[30]

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VRAAG 3

- 3.1 3.1.1 - Verkry toestemming om die visse te vang/gebruik van dam
 - Opleiding om die *Tilapia sparrmanii* te kan identifiseer
 - Besluit wanneer om die ondersoek uit te voer
 - Besluit oor die etikette/merkers/apparaat om te gebruik ✓
 - Besluit oor die vangmetode ✓
 - Besluit oor steekproefgrootte ✓ /aantal herhalings
 - Bepaal die tydperk tussen die twee opeenvolgende vangste/
 steekproewe ✓
 - Besluit hoe om die resultate op te teken ✓
(Merk slegs eerste VIER) (4)
- 3.1.2
$$\text{Aantal } \textit{Tilapia sparrmanii} (P) = \frac{(15 \times 150)}{10} \quad \checkmark$$

$$= 225 \quad \checkmark$$
 (3)
 (7)
- 3.2 3.2.1 Logistiese groeivorm ✓ / S-kurwe/sigmoid (1)
- 3.2.2 A = Sloerfase ✓ / Vestigingsfase
 B = Eksponensiële fase ✓ / Geometriese/ versnellende/log/
 logaritmiëse
 C = Ewewigsgae ✓ / Ewewigsfase/stabiliserende/ konstante fase (3)
- 3.2.3 B ✓ (1)
- 3.2.4 - Omgewingsweerstand neem toe ✓
 - veroorsaak dat die drapasiteit van die gebied bereik ✓ word
 - lei tot die toename in kompetisie ✓
 - tot gevolg dat die sterftetempo neem toe om gelyk aan die
 Geboortetempo te wees ✓
 - 'n Toename in emigrasie ✓ wat balanseer met immigrasie (3)
- 3.2.5 - Bevolking is geakklimatiseer/pas aan by nuwe omgewing ✓
 - Min paringsmaats ✓
 - Tyd benodig om nageslag voort te bring is relatief lank ✓
 - Nie alle individue is seksueelvolwasse ✓ (2)
(Merk slegs eerste TWEE) Enige (10)

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8.

- 3.3 3.3.1 Inwoners ✓
Mynmaatskappy ✓ / Exxaro KZN Sands
Amakhosi en stamleiers ✓
(Merk slegs eerste DRIE) (3)
- 3.3.2 **Twee voordele**
- Skep nuwe werksgeleenthede ✓
- Werksreservering/werksverlies voorkom ✓
- Dra by tot ekonomie van die dorpe ✓ / inkomste vir munisipaliteit uit belasting sal deur besighede toeneem
- Minerale goedkoper beskikbaar ✓
- Ontwikkel infrastruktuur van die dorpe ✓
(Merk slegs eerste TWEE) Enige (2)
- Twee nadele**
- Gesondheidsimplikasies ✓ /
- Daling in waarde van eiendomme van die inwoners ✓
- Inkomste na munisipaliteit deur belastingkoerse sal daal ✓ as gevolg van daling in eiendom se waarde
- Uitbuiting van die gemeenskap ✓
- Verlies aan biodiversiteit ✓
- Toename in besoedeling ✓
- Degradering van die omgewing ✓
- Konflik in die gemeenskap ✓
(Merk slegs eerste TWEE) Enige (2)
(7)
- 3.4 3.4.1 (a) Bron/Ruimtelik/Nisverdeling ✓
(b) Intraspesifieke ✓ mededinging
(c) Mededingende uitsluiting ✓ / kompeterende uitsluiting- beginsel/
Interspesifieke kompetisie (3)
- 3.4.2 - Verskillende spesies ✓
- bestaan saam in dieselfde habitat ✓
- eet blare van plante op verskillende hoogtes ✓ / gebruik die bronne effens anders
- om mededinging/kompetisie te minimaliseer ✓ Enige (3)
(6)
[30]

TOTAAL AFDELING B: 60

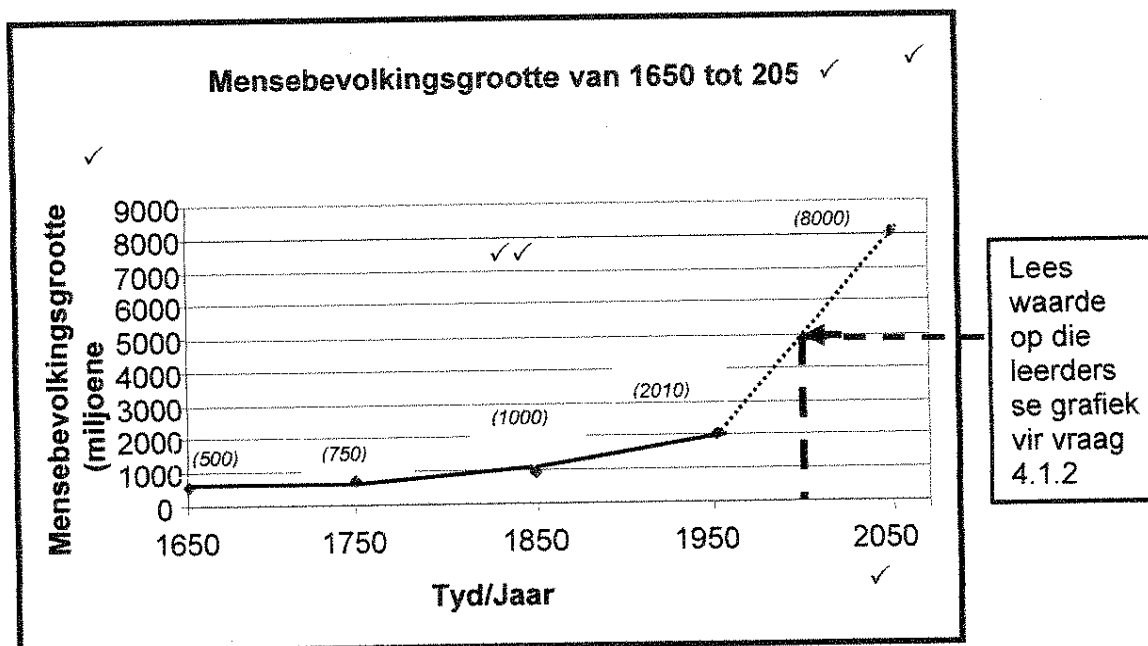
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AFDELING C

VRAAG 4

4.1 4.1.1



Riglyn vir die assessering van die grafiek

Korrekte tipe grafiek en verbinding van punte	1
Titel van grafiek	1
Korrekte byskrif en skaal x-as	1
Korrekte byskrif en skaal y-as	1
Plot van punte op lyngrafiek	1: 3 tot 4 punte korrek geplot 2: Al 5 punte korrek geplot

(6)

LET WEL: As die verkeerde tipe grafiek geteken word, sal punte vir die volgende afgetrek word:

- korrekte tipe grafiek – 1 punt
- 'plot' van punte – 2 punte

As asse omgeruil word dan sal punte verloor word

- korrekte byskrif en skaal vir X- en Y-as – 2 punte

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- 4.1.2 (a) Lees vanaf die kandidaat se grafiek (2)
(waarde✓ en vir miljoen✓/000 000)
- 4.1.3 (b) 200 ✓ jaar ✓ (2)
- 4.1.3 - Om vir infrastruktuurontwikkeling te begroot✓ bv. behuising
- Om vir toekomstige dienste te beplan✓ bv. onderwys
- Om strategieë te hê om die volhoubaarheid van die omgewing te verbeter✓ (2)
(Merk slegs eerste TWEE) (12)
- 4.2 4.2.1 Die selverlenging✓ in die koleoptiel sal vergroot✓/afneem/
dieselfde/verander bly as die ouksienekonsentrasie
verhoog/verlaag/verskil✓ (3)
- 4.2.2 Verwyder die effek van ouksiene✓geproduseer by die punt
aangesien daar wisselende konsentrasies✓ deur elke plant
geproduseer word (2)
- 4.2.3 Tipe grond✓/hoeveelheid water/lichtintensiteit/temperatuur/grootte
van die pot/hou omgewingstoestande dieselfde (1)
- 4.2.4 Die verhoging van die ouksienekonsentrasie lei tot 'n toename in die
selverlenging✓ in koleoptiele tot 'n optimum konsentrasie✓
dan begin dit selverlenging inhibeer✓/laat afneem
Enige (2)
(8)

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- 4.3 - Wanneer 'n abnormale glukosevlak waargeneem word ✓
 - deur die pankreas ✓
 - skei die eilandjies van Langerhans ✓ hormone af
 - in die bloedstroom ✓

Wanneer die bloedglukosevlak styg ✓

- Insulien ✓ word afgeskei
- wat die bloedglukosevlak verlaag ✓
- terug na normaal ✓
- insulienafskeiding word inhibeer ✓

Wanneer die bloedglukosevlak daal ✓

- Glukagon ✓ word afgeskei
- wat die bloedglukosevlak verhoog
- terug na normaal ✓
- glukagonafskeiding word inhibeer ✓

Enige (10)

Oorsake van diabetes mellitus

- Onvoldoende afskeiding ✓
- Geen afskeiding van insulien ✓
- Produksie van defektiewe insulien ✓
- Liggaamselle weerstandig teen die aksie van insulien ✓
- onvermoë van selle om glukose doeltreffend te gebruik ✓

Enige (2)

Simptome

- Glukose in die urine ✓
- Gereelde urinering ✓
- Uiterste dors ✓
- Moegheid ✓ / lusteloosheid / flou word
- Naarheid ✓ / Vomering
- Gewigsverlies ✓
- Belemmerde visie ✓
- Wonde wat nie genees nie ✓

Enige (3)

Bestuur van diabetes mellitus

- Oefening ✓
- Eet dieet wat geskik vir diabetiese persoon is ✓
- Gebruik voorgeskrewe medikasie / middels ✓ vir die beheer van diabetes mellitus

Enige (2)
 Inhoud (17)


ASSESSERING VAN DIE AANBIEDING VAN DIE OPSTEL

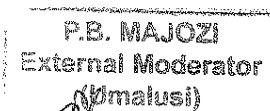
Punte	Beskrywings
3	Goed gestruktureerd – demonstreer insig en begrip van vraag
2	Klein gapings of irrelevante inligting in die logika en vloei van die antwoord
1	Beduidende gapings of irrelevante inligting in die logika en vloei van die antwoord
0	Nie gepoog nie / Niks behalwe vraagnommer neergeskryf nie / geen relevante inligting

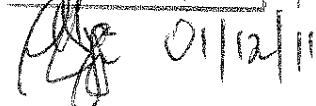
Sintese (3)
 (20)

TOTAAL AFDELING C: 40
 GROOTTOTAAL: 150


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