

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

LIFE SCIENCES P2

VERSION 1 (NEW CONTENT) FOR FULL-TIME CANDIDATES

NOVEMBER 2011

POSSIBLE ANSWERS

MARKS: 150

This memorandum consists of 11 pages.

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.

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.

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

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

- 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]

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)

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

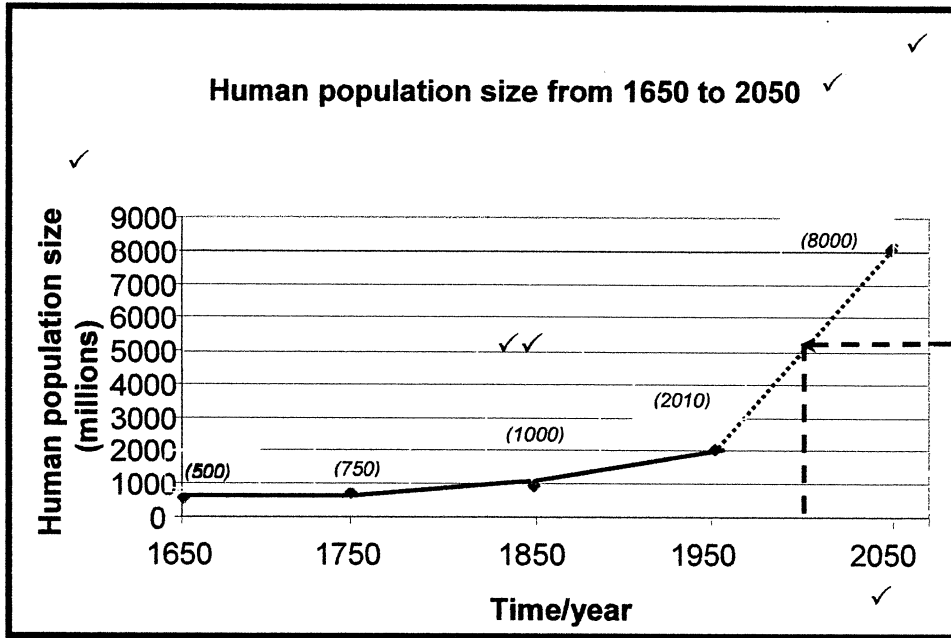
- Different species ✓
 - coexist in the same habitat ✓
 - eating leaves of plant at different heights✓/use the resources slightly differently
 - minimising competition✓
- Any (3)
(6)
[30]

TOTAL SECTION B: 60

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

- 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)

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