basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES P2

EXEMPLAR 2012

MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2013

1. **If more information is given than marks allocated**
   Stop marking when maximum marks are reached, draw a wavy line and write '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 a whole process is given when only part of it is required**
   Read all and credit relevant parts.

4. **If comparisons are required 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 descriptions are required but diagrams with annotations are given**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If the sequence is muddled and links do not make sense**
   Where the sequence and links are correct, credit. Where the sequence and links are incorrect, do not credit. If sequence and links becomes correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation, but credit the rest of the 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 recognisable, accept, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept if correct according to curriculum

14. **If only a letter is required and only a 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 of all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.

18. **Code-switching/mixing of official languages (terms and concepts)**
A single word or two that appears in his/her answers in any official language other than the learners' assessment language should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This applies to all official languages.

SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	D✓✓		
	1.1.3	C✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	C✓✓		
	1.1.7	C✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	D✓✓	(10 x 2)	**(20)**

1.2	1.2.1	Alien✓/Exotic species		
	1.2.2	Biodiversity✓		
	1.2.3	Fungus✓/Yeast		
	1.2.4	Invertebrates✓		
	1.2.5	Sustainable✓/Sustainability		
	1.2.6	Asexual✓reproduction		
	1.2.7	Carbon footprint✓		
	1.2.8	Desertification✓		
	1.2.9	Double✓ fertilisation		
	1.2.10	Sorus✓		**(10)**

1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	Both A and B✓✓		
	1.3.4	None✓✓		
	1.3.5	B only✓✓		
	1.3.6	Both A and B✓✓		
	1.3.7	Both A and B✓✓		
	1.3.8	Both A and B ✓✓		
	1.3.9	B only✓✓		
	1.3.10	B only✓✓	(10 x 2)	**(20)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 Multicellular✓ (1)

2.1.2 (a) B✓ (1)
(b) B✓ (1)
(c) C✓ (1)
(d) B✓ (1)
(e) C✓ (1)
(f) D✓ (1)
(g) A✓ (1)

2.1.3 It separates the gut from the body wall✓
Allowing for more extensive growth of organs and systems✓ (2)

2.1.4 Annelida✓
Arthropod✓ (2)

2.1.5 Coelom in Arthropods is reduced and contain haemocoels✓
Coelom in Annelids contain coelomic fluid✓
(2)

2.1.6 They are pollinators✓
Used in biological control of pests✓
Important for seed dispersal✓ (Any 1) (1)
(15)

2.2 2.2.1 D – Anther✓
E – Stigma✓
F – Petal ✓/Corolla (3)

2.2.2 B✓ (1)

2.2.3 Filaments and stigma are enclosed✓
Has a large corolla/petals ✓ (Any 1) (1)

2.2.4 B✓ (1)

2.2.5 A: angiosperm✓
Pine cone: gymnosperm✓ (2)

2.2.6 Gymnosperm's seeds are naked✓
Angiosperm's seeds are enclosed in an ovary/fruit✓ (2)

2.2.7 After pollination a pollen tube✓ is developed – allows male gamete
to be carried directly to the egg cell ✓in the ovule (Any 1) (2)

2.2.8 Seeds have a tougher coat✓ which prevents drying out
Seeds have food reserves✓ for the developing embryo
Seeds have a fully developed embryo✓ to immediately start growing when conditions become favourable
Seeds have a longer lifespan✓ than spores
Seeds can remain dormant (and still viable) ✓ longer than spores
(Mark first TWO only) (Any 2) (2)
(14)

2.3 2.3.1 Protista✓ (1)

2.3.2 Take anti-malarial drugs✓
Use insect repellents on exposed skin✓
Sleep under bed-nets✓
Empty areas of standing water to prevent breeding of mosquitoes✓
(Any 2) (2)

2.3.3 A female Anopheles mosquito✓ bites an infected person; the parasite is sucked in ✓and develops further in the vector and the mosquito bites another person✓ transferring the parasite. (Any 2) (2)

2.3.4 Antibiotics can only be used to treat diseases caused by bacteria✓ and the malaria is transmitted by a protist.✓ (2)

2.3.5 The economy will be negatively affected✓ as the cost of malarial treatment is high✓/decreased work production (2)

2.3.6 From hospital records✓ (1)

2.3.7 Not all people affected go to hospital✓ in some areas (1)
(11)
[40]

QUESTION 3

3.1 3.1.1 Food wastage in Sub-Saharan Africa

5/160✓ X 100✓ = 3,1% ✓ (3)

3.1.2 Because food is scarce due to poverty✓, there is no food left over to waste.✓ (2)

3.1.3 In developed regions, food purchased is often in excess of their requirements✓ and people will throw unused food away. ✓

In developing regions: Many people cannot afford food✓ and will generally not have food in excess of their needs.✓ (4)

3.1.4 Possible ways to reduce food waste include:

- Plan what you need before you shop and reduce impulse and spontaneous buying✓
- Understand how to store and preserve food✓
- Ensure that unused food is used in some way, e.g. give to the poor, animal feed, compost heaps. ✓
- Education✓ about the need to prevent wastage (Any 2) (2)

(11)

3.2 3.2.1 There has been an increase in the human population✓ (1)

3.2.2 (a) Pesticides kill the pest which destroy the crops✓ (1)
(b) Fertilisers increase nutrient content in the soil✓ (1)

3.2.3 Consumers could die✓ if they feed on pests that have been poisoned by the pesticide✓.

If the pests are killed off✓ by the pesticide there will not be food available for the next level consumer✓. (Any 1 x 2) (2)

3.2.4 Loss of flora and fauna biodiversity by inbreeding of GMOs✓. Entire species could be wiped out✓ if exposed to new disease✓/new environmental conditions. (3)

3.2.5
- Nitrogen-rich compounds in fertilisers✓
- Causes an overgrowth of algae✓/ algal bloom
- This leads to a decrease in the amount of light coming into the water✓
- As a result plants start to die✓
- Increasing the amount of bacteria✓ that decomposes these plants
- This leads to a decrease in the amount of oxygen✓as it is used up by the bacteria
- Other aquatic organism also die✓due to lack of oxygen✓

(Any 5) (5)

(13)

3.3
- Investigate methods to collect and utilise methane gas as a fuel✓
- Encourage citizens of the city to sort their waste✓ into different waste containers
- Partnerships with recycling companies for improved collection of different wastes✓
- Fines✓ for people who do not separate the waste into different bins
- Educate people to use organic waste✓ for example to make compost
- Encourage recycling ✓of items such as papers, tins, glass
- Encourage citizens to re-use✓ items such as glass etc
- Charge/Penalise people extra if they generate more waste✓

(*Mark first FOUR only*) (Any 4) **(4)**

3.4 3.4.1 Changes in the levels of chlorine and ozone concentration✓ from 1950 to 1990✓ (2)

3.4.2 An increase in the level of chlorine ✓ leads to a decrease in the ozone concentration ✓ (2)

3.4.3 Chlorine levels✓
Ozone concentration✓ (2)

3.4.4 Between 1970 and 1980✓ (1)

3.4.5 CFCs might persist for a long time in the atmosphere✓
Other countries might have taken longer to implement the protocol✓
Households were still using the existing items with CFCs✓
(Any 2) (2)

3.4.6 Aerosols✓
Refrigerators✓
Food packaging✓ (Any 1) (1)

3.4.7 Ozone layer provides protection against ultraviolet rays✓
thus reducing the chances of getting skin cancer✓ (2)
(12)
[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

Urbanisation✓ – land is cleared for housing, industries and roads✓ leading to habitat fragmentation which eventually lead to a decrease in genetic diversity✓ causing populations to become extinct

Poor farming methods✓ – monoculture allows only a few species of animals to survive✓, losing a large amount of plants and animals which would have been present if the crops were varied✓

Overgrazing✓ of land leads to loss of topsoil/erosion✓ decreasing spoil fertility✓

Use of pesticides✓ which kills secondary consumers ✓ and fertilisers which when washed to rivers disturbs the ecosystem✓ of the river leading to extinction of some populations

Golf estates✓ require plenty of water and vast clearance of vegetation to make way for the lawn✓, in which only a few species will exist✓

Mining✓ results in degradation of ground water as well as a change in the pH of the water around the area, emission of toxic gases into the atmosphere and also causes soil erosion✓. The environment is altered in such a way that organisms can no longer exist in the area✓

Deforestation✓ – the demand for wood products cause many trees to be cleared✓, this destroys the ecosystems within the forest area✓ leading to extinction of some populations.

Destruction of wetlands and grasslands✓ – these areas have been cleared for human inhabitation ✓reducing the biodiversity of organisms surviving entirely on wetlands or grasslands✓ (Any 6) **max (17)**

ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Description
3	Well structured – demonstrates insight and understanding of the question
2	Minor gaps in the logic and flow of the answer
1	Attempted but with significant gaps in the logic and flow of the answer
0	Not attempted/nothing written other than question number

Synthesis (3)

TOTAL SECTION C: 20
GRAND TOTAL: 150