



education

**Lefapha la Thuto la Bokone Bophirima
Noord-Wes Departement van Onderwys
North West Department of Education
NORTH WEST PROVINCE**

PROVINCIAL ASSESSMENT

GRADE 11

**LIFE SCIENCES P2
NOVEMBER 2019
MARKING GUIDELINES**

MARKS: 150

These marking guidelines consist of 11 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

- 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 a part of it is required**
Read all and credit the relevant part.
- 4. If comparisons are asked for, but descriptions are given**
Accept if the 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 incorrect, do not credit. If sequence and links become 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 the answer, 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, provided it was accepted at the national memo discussion meeting.
- 14. If only the letter is asked for, but only the name is given (and vice versa)**
Do not 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 appear(s) in any official language other than the learner's 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. Changes to the memorandum

No changes must be made to the memoranda. The provincial internal moderators must be consulted.

SECTION A**QUESTION 1**

1.1.1 C ✓✓

1.1.2 C ✓✓

1.1.3 D ✓✓

1.1.4 B ✓✓

1.1.5 D ✓✓

1.1.6 A ✓✓

1.1.7 D ✓✓

1.1.8 B ✓✓

1.1.9 C ✓✓

(9 x 2) (18)

1.2.1 Saprophyte ✓

1.2.2 Sporangium ✓

1.2.3 Invertebrates ✓

1.2.4 Symmetry ✓

1.2.5 Sessile ✓

1.2.6 Cephalisation ✓

1.2.7 Desertification ✓

1.2.8 Sustainability ✓

1.2.9 Biodegradable ✓

(9)

1.3.1 B only ✓✓

1.3.2 A only ✓✓

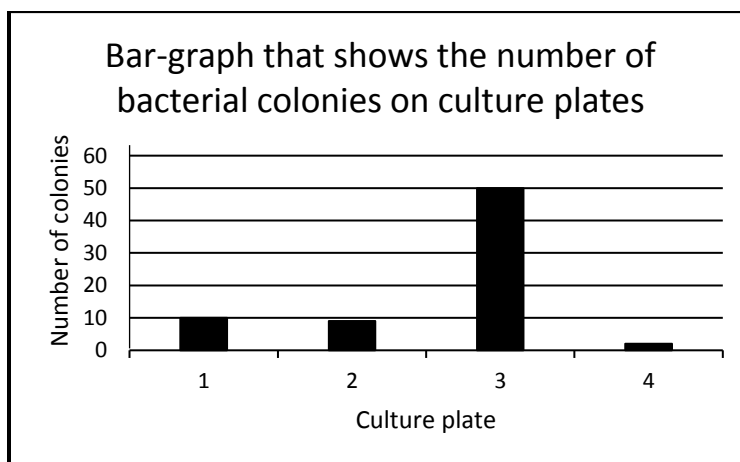
1.3.3 B only ✓✓

(3 x 2) (6)

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- 1.4.1 (a) C ✓ (1)
(b) A ✓ (1)
(c) D ✓ (1)
(d) B ✓ (1)
- 1.4.2 (a) Prokaryotic and acellular ✓ (1)
(b) Unicellular prokaryotes ✓ (1)
(c) Eukaryotic with a simple build ✓ (1)
(d) Eukaryotic with cell walls containing chitin and no chlorophyll ✓ (1)
(8)
- 1.5.1 (a) Vascular tissue ✓/xylem and phloem (1)
(b) Seeds ✓ (1)
(c) Seeds form in ovaries ✓ (1)
- 1.5.2 Bryophytes ✓/Bryophyta (1)
- 1.5.3 - They have vascular tissue ✓/xylem and phloem
- that can transport substances more effectively and further ✓ (2)
- 1.5.4 - Ovules of Gymnosperms are bare on the scales ✓ of female cones
- Ovules of Angiosperms are inside ovaries ✓ (2)
- 1.5.5 Spermatophytes ✓/Spermatophyta (1)
(9)

TOTAL SECTION A: 50

SECTION B**QUESTION 2****2.1****Criteria to assess the graph**

Heading with both variables	1
Correct type of graph	1
Labels of X- and Y-axis	1
Thickness and spacing of columns equal and dimensions on Y-axis in equal multiples	1
Plotting: 1 – 3 columns correct or All 4 columns correct	1 2

(6)

2.1.2 (a) 3 ✓ (1)

(b) All 3 nutrients ✓ were present (1)

2.1.3 B ✓ (1)

2.1.4 Bacterial growth will be best ✓ when all three the nutrients ✓ are found on the culture plates (2)

2.1.5 - Size of the culture plate ✓
 - Sterile conditions ✓
 - Initial number of colonies ✓
 - Environmental conditions ✓
 - Person that execute it ✓ (mark first 2) (2)

2.1.6 Repeat the investigation ✓/use more culture plates with nutrients (1)
(14)

2.2

2.2.1 C - Stigma ✓
 D – Anther ✓
 E – Petal ✓ (3)

2.2.2 (a) B ✓ (1)

(b) Petals are conspicuous ✓/stamens and pistil inside the flower (1)

2.2.3 B ✓ (1)
(6)

2.3

2.3.1 (a) Seeds will only germinate when conditions are favourable ✓/when there is enough water, etc. (1)

(b) The developing embryo uses it as food until photosynthesis can take place ✓ (1)

2.3.2 $120 - 90 = 30$
 $(30 \div 120 \times 100) \checkmark = 25 \checkmark \%$ (2)
(4)

- 2.4**
- Seeds develop from ovules in the ovary and are well protected/developing seeds are protected by a fruit ✓
 - Seeds are adapted to survive unfavourable conditions/seeds only germinate when conditions are favourable ✓
 - The embryo is enclosed inside a seed to protect it from drying out ✓
 - The seeds have adaptations to disperse easily and effectively ✓
 - Flowering plants are not dependent on water for reproduction/pollination occurs to transfer the sperm to the pistil ✓
 - The pollen grains protect sperm from drying out ✓ (mark first 3) **(3)**

2.5

2.5.1 Platyhelminthes ✓ (1)

2.5.2 - Annelida's coeloms are filled with fluid ✓ which serves as a hydrostatic skeleton
 - Arthropoda's coeloms have organs inside ✓ (2)
(3)

2.6

2.6.1 An increase in the chloride levels ✓ lead to a decrease in the ozone concentration ✓ (2)

2.6.2 Chloride levels ✓
 Ozone concentration ✓ (2)

2.6.3 Between 1970 and 1980 ✓ (1)

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- 2.6.4 - CFC's can stay in the atmosphere for a long period of time ✓
 - Other countries can take longer to implement the protocol ✓
 - Households still uses existing items with CFC's ✓ (mark first 2) (2)
- 2.6.5 Aerosol cans ✓/fridges/food packing ✓ (mark first 1) (1)
- 2.6.6 - It supplies protection from ultra violet rays ✓
 - and thus decrease the risk for skin cancer ✓ (2)
(10)
- [40]**

QUESTION 3**3.1**

- 3.1.1 Cnidaria ✓ (1)
- 3.1.2 Radial symmetry ✓ (1)
- 3.1.3 - They can explore their environment from all directions ✓
 - to detect food/predators ✓ (2)
- 3.1.4 Annelida ✓/Arthropoda/Chordata (1)
(11)

- 3.2** - The exoskeleton is thick, hard and cannot stretch/expand and grow with the animal ✓ - it is overcome by the shedding of the skeleton to form a new, softer and more flexible one that hardens in time ✓.

OR

- The exoskeleton limits movement of the joints ✓ - it is overcome by a thin, flexible exoskeleton at the joints ✓. **(2)**

3.3

- 3.3.1 - Nitrates ✓
 - Phosphates ✓
 - Sodium ✓
 - Chlorides ✓ (mark first 3) (3)
- 3.3.2 The waste water treatment works are functioning poorly/not well ✓. The levels of faecal coliforms increased much ✓✓. (3)
- 3.3.3 Cholera/hepatitis A/dysentery/gastro-enteritis/typhoid (mark first two) (2)
- 3.3.4 More acidic ✓ (1)

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3.3.5 Acid mine water forms when underground water and water from the surface come in contact with the bare metal rich rock surface/metals ✓ in mine tunnels. Chemical reactions occur which make the water acidic ✓ when the water is not pumped out regularly. Acid mine water drainage occurs when this acidic water flows out and expose nature to this destructive toxic water ✓.
(any 2) (2)

3.3.6 - Too little oxygen ✓ in the water as a result of an increase in the number of bacteria that use the oxygen/eutrophication
 - The water is too acidic/the pH of the water is too low ✓
 - Too much salt/sodium ✓ in the water
 - Too much chloride ✓ in the water
 - Too much nitrates ✓ in the water
 (mark first two) (2)
(13)

3.4

3.4.1 *Alien/invasive plants* are plants that do not originate naturally in an area/land but were introduced from another land ✓.
Indigenous plants originate naturally in an area/land ✓. (2)

3.4.2 - Alien/invasive plants decrease water quality ✓* because
 - it contributes to eutrophication ✓,
 - it kills indigenous water plants, which are the beginning of indigenous food webs, by blocking out sunlight ✓,
 - it clogs waterways, irrigation pipelines and channels ✓
 - and it ends up in pumps that regulate the flow of water from dams ✓.
 - Alien/invasive plants decrease water availability ✓*
 - because it uses much more water than indigenous plants ✓.
 2* obligatory + any other 3 (5)

3.4.3 - Biological control – the natural enemy of the alien/invasive species ✓/
 life organisms from the alien/invasive species' own country are imported ✓
 to control the numbers of the alien/invasive specie
 - Chemical control – specific herbicides ✓ which are biodegradable, are used to kill the alien/invasive species ✓
 - Mechanical control – the whole alien/invasive species is physically removed ✓ by machines/manual labour ✓
 (6)
(13)

3.5

3.5.1 (a) Photosynthesis ✓ (1)

(b) Respiration ✓ (1)

3.5.2 (a) It causes the temperature to increase ✓ (1)

(b) Greenhouse effect ✓ (1)

- 3.5.3 (a) A carbon sink absorbs CO₂ ✓ from the atmosphere (1)
- (b) Plants ✓/organisms that have chlorophyll and can photosynthesize (1)
- (c) The CO₂-levels will increase ✓ (1)
- (7)
[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

What is food security?

- It is when all people ✓
- at all times ✓
- have access to sufficient ✓ and
- safe/nutritious food ✓. (4)

Poor farming practises that threaten food security

- The following poor farming practises can lead to smaller crops/crop failures ✓ that threaten food security:
- Monoculture/planting of crops of the same type ✓
- makes crop plants vulnerable to diseases ✓.
- More synthetic pesticides are needed to manage/eradicate pests on crops ✓.
- It also kills the natural predators of most of the pests ✓
- and causes the need for more pesticides ✓ as pests develop resistance to pesticides.
- Intensive agriculture/overgrazing ✓
- can cause degradation of soil/soil erosion/loss of topsoil ✓.
- The soil is barren ✓.
- Expensive synthetic fertilizers are needed that can cause other environmental problems ✓. (any 8)

Contribution of genetically modified/engineered food to address food shortages

- Genetically modified food increase food security/decrease food shortages ✓.
- Bigger crop yields/bigger fruit ✓.
- Plants can grow in poor soil ✓.
- Plants are draught resistant/need less water ✓.
- Ripening time of plants is shorter ✓.
- Fruit and vegetables have a longer shelf life ✓.
- Life stock is more hardened ✓.
- More muscle mass in animals that are bred for their meat/more meat/higher milk yield/more eggs per hen ✓.
- Plants/life stock can withstand diseases/pests ✓.
- Plants have more added nutrients/life stock supply better nutrition ✓.
- Plants are stress resistant/life stock can endure to be pinned in limited spaces ✓.

(any 5)

Contents: 17
 Synthesis: 3
(20)

ASSESSMENT OF THE PRESENTATION OF THE ESSAY

Criteria	Relevancy (R)	Logic sequence (L)	Completeness (C)
General	All information given is relevant to the question.	Ideas are given in a logical sequence.	Answered all aspects required by the essay.
In this essay in Q. 4	Only information applicable to food security, threatening of food security through poor farming practices and the contribution of GM-food to address food shortages. No irrelevant information.	Information applicable to food security, threatening of food security through poor farming practices and the contribution of GM-food to address food shortages are offered in a logical way and it is in sequence.	The following marks must at least be obtained: -3/4 for what is meant by food security -6/8 for threatening of food security through poor farming practices -3/5 for the contribution of GM-food to address food shortages
Mark	1	1	1

TOTAL SECTION C: 20
GRAND TOTAL: 150