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Province of the
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**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2017

**LIFE SCIENCES P2
MARKING GUIDELINE**

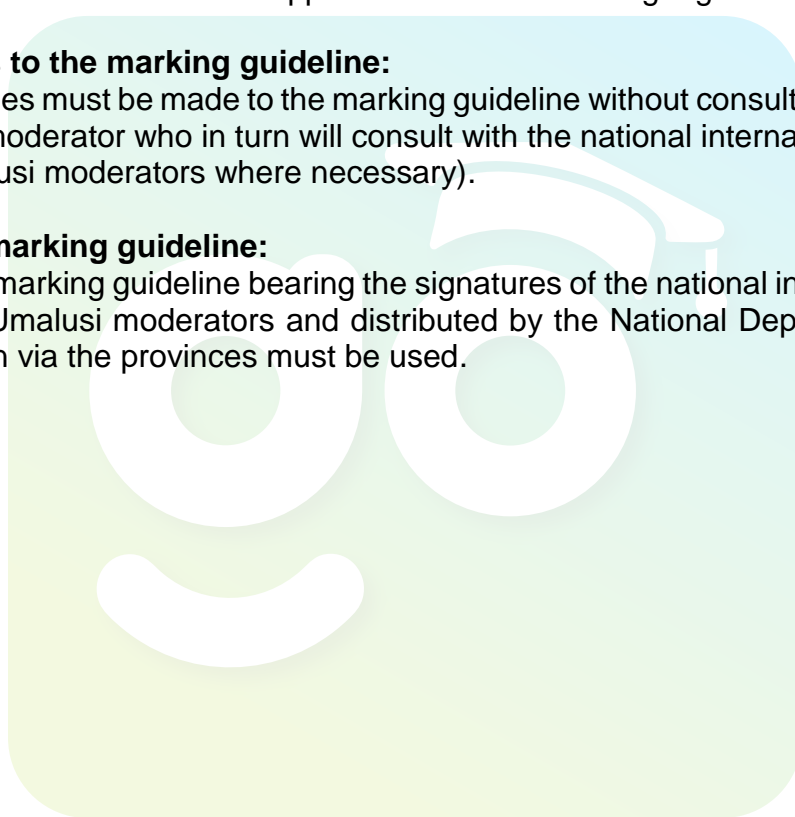
MARKS: 150

This marking guideline consists of 10 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 are 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. Marking guideline 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 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. **Changes to the marking guideline:**
No changes must be made to the marking guideline without consulting the provincial internal moderator who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).
20. **Official marking guideline:**
Only the marking guideline 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.



SECTION A

QUESTION 1

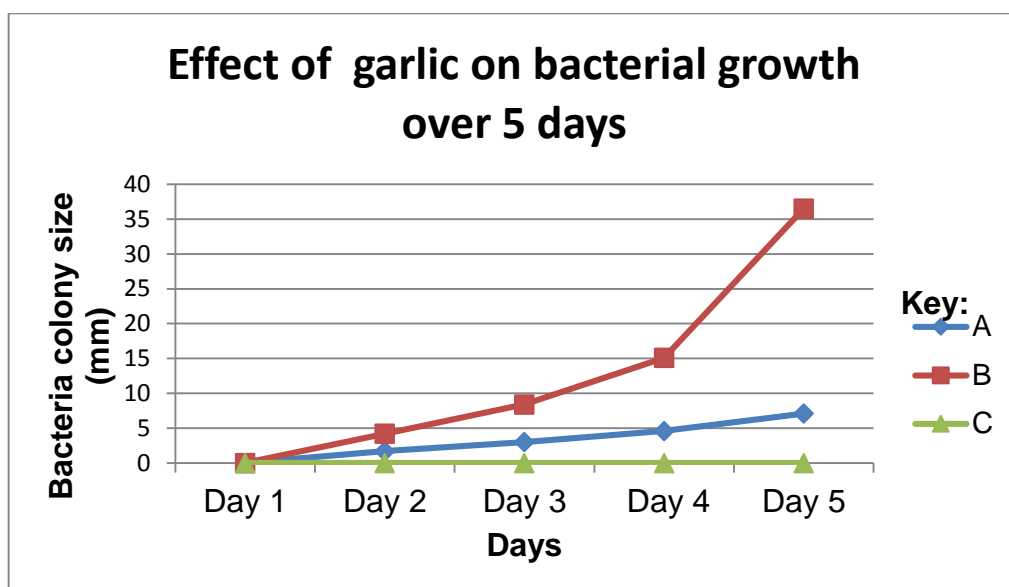
1.1	1.1.1	D	✓✓	
	1.1.2	B	✓✓	
	1.1.3	C	✓✓	
	1.1.4	D	✓✓	
	1.1.5	A	✓✓	
	1.1.6	A	✓✓	
	1.1.7	B	✓✓	
	1.1.8	C	✓✓	
	1.9	D	✓✓	
	1.1.10	C	✓✓	(10 x 2) (20)
1.2	1.2.1	Deforestation	✓	
	1.2.2	Vegetative reproduction	✓	
	1.2.3	Ecological Carbon footprint	✓	
	1.2.4	Sorus ✓/Sori		
	1.2.5	Bio-accumulation ✓/Biological magnification		
	1.2.6	Thallus	✓	
	1.2.7	Ozone layer	✓	(7 x 1) (7)
1.3	1.3.1	A only	✓✓	
	1.3.2	A only	✓✓	
	1.3.3	B only	✓✓	(3 x 2) (6)
1.4	1.4.1	3,5 °C	✓	(2)
	1.4.2	(a) Between 4 and 6 days	✓✓	(1)
		(b) 10 days	✓	(1)
1.5	1.5.1	Mould ✓/Rhizopus		(1)
	1.5.2	Air ✓, Food ✓/Nutrients, Water ✓/Moisture		(3)
	1.5.3	He could toast the bread.	✓	(1)
	1.5.4	The method removes moisture from the bread and makes it dry.	✓	(2)
1.6	1.6.1	Insect	✓	(1)
	1.6.2	1 Stigma	✓	
		2 Anther	✓	(2)
	1.6.3	Perianth	✓	(1)
	1.6.4	(a) 5	✓	(1)
		(b) 4	✓	(1)
TOTAL SECTION A:				50

SECTION B

QUESTION 2

- 2.1 2.1.1 **A** Arthropoda ✓
B Porifera ✓
C Platyhelminthes ✓ (3)
- 2.1.2 Bilateral ✓ symmetry (1)
- 2.1.3
- The animal is able to move through the environment ✓ in a consistent direction,
 - with a definite front and rear end and a left and right side. ✓
 - This helps with feeding or escaping from predators. (Any 1) (1)
- 2.1.4 (a) A ✓ and C ✓
 (b) C ✓
 (c) A ✓ and C ✓
 (d) A ✓ (6)
- 2.1.5 Animals don't need any special means to circulate nutrients/gasses to different parts of body, ✓ it takes place through diffusion. (1)
- 2.1.6
-
- The diagram shows a cross-section of a flatworm with three concentric layers. The outermost layer is labeled 'Ectoderm' and is shaded with diagonal lines. The middle layer is labeled 'Mesoderm' and is shaded with horizontal lines. The innermost layer is labeled 'Endoderm' and is shaded with vertical lines. A central dark circle represents the gut or alimentary canal.
- Ectoderm ✓ - gives rise to epidermis and nervous system ✓
 Mesoderm ✓ - gives rise to body systems and organs ✓ and nervous system ✓
 Endoderm ✓ - forms lining of the alimentary canal and digestive glands ✓ (6)
- 2.2 2.2.1 (a) Composition of the test specimen ✓ (1)
 (b) Growth of the bacteria colony ✓ (1)
 (c) Same amount of milk ✓
 Same period/ time ✓ to do investigation
 Same environmental conditions ✓/temperature ✓ (Any 2) (2)

2.2.2

**Guidelines for assessing the graph:**

Three line graphs on the same set of axes	1	
Title of graph	1	
Correct label and scale for X-axis	1	
Correct label, unit and scale for Y-axis	1	
Drawing of line graphs	1: 1 to 2 lines plotted correctly 2: All 3 lines plotted correctly	(6)

2.2.3 To avoid growth of bacteria ✓ before the start of the experiment as most bacteria do not grow in cold conditions ✓ (2)

2.2.4

- Petri dish **C** with milk, the *E.coli* specimen and garlic extract did not show any signs of bacterial growth. ✓
- The *allicin* ✓/antimicrobial substance in the garlic extract destroyed the bacteria ✓ hence there was no growth in Petri dish **C**. (3)

2.3 2.3.1 **I** Pteridophytes ✓
II Bryophytes ✓ (2)

2.3.2 **I** need water for fertilisation ✓
IV does not depend on water ✓ for fertilisation (2)

I have no seeds ✓
IV have seeds ✓ (2) (4)

2.3.3 **II** ✓ (1)
[40]

QUESTION 3

- 3.1 3.1.1 1 Solar radiation penetrates through a blanket of greenhouse gases in the atmosphere and reaches the earth's surface. ✓
 2 Once absorbed, some of the solar radiation is sent back into the atmosphere in the form of infra-red rays. ✓ Some of the energy passes into space.
 3 But most of the energy is absorbed by the greenhouse gases in the atmosphere. ✓
 4 The greenhouse gases redirect this energy back to the earth warming the Earth. ✓ (4)
- 3.1.2 Prevents the earth from becoming too cold ✓/warms the earth (1)
- 3.1.3 Coal burning power stations ✓/burning fossil fuels (1)
- 3.1.4 • Prolonged periods of drought ✓ followed by heavy flooding ✓
 • washes away the top soil. ✓
 • The soils will not be able to support plant life. ✓
 • The land turns into a desert. ✓ (Any 4) (4)
- 3.2 3.2.1 **Site C** ✓ (1)
 • Has the highest organic content ✓ resulting in over enrichment of water with nutrients. ✓
 • This causes algae to grow very rapidly ✓/ algal bloom,
 • preventing light from reaching lower levels of the water. ✓
 • Photosynthesis stops and plants die and rot. ✓
 • The number of bacteria increases as they decompose the plants ✓
 • and use up and decrease oxygen ✓ concentration as seen at Site C. (4) (Max 5) (5)
- 3.2.2 Low organic content ✓ in water results in high oxygen concentration ✓ in water as there are less bacteria ✓ to use up the oxygen due to eutrophication. ✓
- OR**
- High organic content ✓ in water results in low oxygen concentration ✓ in water as there are more bacteria ✓ which use up the oxygen due to eutrophication. ✓ (4)
- 3.3 3.3.1 There was a significant decrease ✓✓ in the number of species before and after agriculture. (2)
- 3.3.2 There is low plant species diversity due to monoculture. ✓ This affects species diversity ✓ as food sources ✓ are affected. This has a negative effect on the food chain ✓ and could cause the entire food webs to collapse. ✓ (4)
- 3.3.3 Plants ✓ (1)

3.3.4 It is a study that is done to an area to determine the level of change/damage ✓ that humans have on that area. It is important to determine how badly an area is affected so that measures can be put in place ✓ to rehabilitate or to save/protect ✓ what is left in that particular area. (3)

3.4 3.4.1 $100 \checkmark - (69 + 15 + 3 + 2) \checkmark = 11 \checkmark$ (3)

3.4.2 Methane ✓ (1)

3.4.3 It is burnt to:

- provide heat ✓/cook food
- generate electricity ✓

(2)

3.4.4

- Nuclear power ✓
- Hydroelectric power ✓
- Solar power ✓
- Wind power ✓

(Any 2) (2)

3.4.5 Biodiversity is decreased ✓ as mines destroy habitats ✓ and the animals that live there die ✓/move away.

OR

Biodiversity decreases ✓ as mines release chemicals ✓/pollutants into the environment which poisons plants and animals. ✓ (3)
[40]

TOTAL SECTION B: 80

SECTION C**QUESTION 4**

Write an essay in which you describe how invasive alien plants affect the quality of water and discuss various ways of controlling invasive alien plants including their advantages and/or disadvantages.

EFFECT OF ALIEN INVASIVE SPECIES ON WATER QUALITY

- They form a continuous mat on the surface of water. ✓
- This blocks light ✓ from reaching the lower levels of the water.
- Photosynthesis at the lower level of water stops. ✓
- The plants die and decompose. ✓
- The population of decomposers increases, ✓
- using up large amounts of oxygen. ✓
- Aquatic animals/ fish/frogs die ✓
- due to lack of oxygen. ✓
- This decreases the quality of water. ✓

MECHANICAL CONTROL ✓

- Removal of invasive species by hand ✓ or with machines
- Effective in controlling small populations ✓
- Advantage: minimizes harm to non-invasive plants and animals ✓
- Disadvantage: Labour intensive ✓ and time consuming ✓

CHEMICAL CONTROL ✓

- Uses chemicals ✓/chemical compounds to control spread of alien invasive species
- Effective in both large and small populations ✓
- Disadvantage: possible contamination of land and water resources ✓ and
- may result in the killing of desirable plants and animal species. ✓
- Target species may develop resistance to the chemicals ✓

BIOLOGICAL CONTROL ✓

- Uses a specific species to control the spread of alien invasive species ✓
- Both indigenous and non-indigenous species may be used ✓
- Can be both environmentally safe ✓ and successful
- Use of non-indigenous species may increase alien invasive species ✓

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance (R)	Logical sequence (L)	Comprehensive (C)
Generally	All information provided is relevant to the question.	Ideas are arranged in a logical sequence.	All aspects of the essay have been sufficiently addressed.
In this essay in Q4	Only information relevant to the effects of alien invasive plants on the quality of water and the advantages and disadvantages of the various ways of controlling invasive alien plants are described. No irrelevant information included.	The description of the effects of alien invasive plants on the quality of water and the advantages and disadvantages of the various ways of controlling invasive alien plants is presented in a logical and sequential manner.	At least the following marks should be obtained: <ul style="list-style-type: none"> • 5 for the effects of alien invasive plants on the quality of water and • 10 the advantages and disadvantages of the various ways of controlling invasive alien plants
Mark	1	1	1

Content: (17)
 Synthesis: (3) **[20]**

TOTAL SECTION C: 20

GRAND TOTAL: 150

