GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

EXEMPLAR

2020

LIFE SCIENCES P2

OCTOBER /NOVEMBER

MARKING GUIDELINE

GRADE : 11

MARKS : 150

NUMBER OF PAGES : 11

GAUTENG DEPARTMENT OF EDUCATION

EXEMPLAR

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are 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 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 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)

SECTION A

QUESTION 1

1.1	1.1.1	D✓✓		
	1.1.2	C✓✓		
	1.1.3	C✓✓		
	1.1.4	A✓✓		
	1.1.5	B✓✓		
	1.1.6	A✓✓		
	1.1.7	C✓✓		
	1.1.8	B✓✓		
	1.1.9	D✓✓		
	1.1.10	C✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Antibody✓		
	1.2.2	Sori/✓sorus		
	1.2.3	Diploid✓		
	1.2.4	Pollinating agent✓		
	1.2.5	Predator✓		
	1.2.6	Testa✓		
	1.2.7	Pathogen✓		
	1.2.8	Emigration ✓		
	1.2.9	Spore✓		
	1.2.10	Lag phase ✓	(10 x 1)	**(10)**
1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	A only✓✓	(3 x 2)	**(6)**
1.4	1.4.1	Cladogram ✓		(1)
	1.4.2	Multicellular✓		(1)
	1.4.3	(a) B✓		(1)
		(b) C✓		(1)
		(c) B✓		(1)
		(d) C✓		(1)
		(e) D✓		(1)
	1.4.4	Cnidaria✓		
		Platyhelminthes✓		(2)
				(9)
1.5	1.5.1	Injection✓		

Orally✓ (2)

1.5.2 Week 6✓ (1)

1.5.3 5 weeks✓ (1)

1.5.4 (Weeks) 7 – 9✓ (1)
(5)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 A site where solid waste is disposed of ✓ by burying it between layers of dirt ✓ (2)

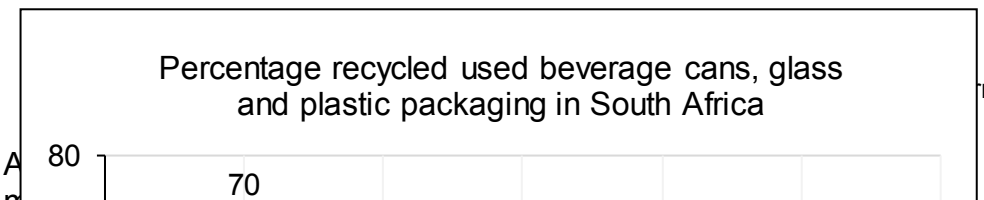
2.1.2 61 100 000 ✓ tonnes of hazardous waste (1)

2.1.3 Greenhouse gases such as CO_2 and methane are emitted ✓ as waste decomposes in landfills ✓ enhancing the greenhouse effect (2)

2.1.4
- Reduces the amount of waste sent to landfills and incinerators✓
- Conserves natural resources such as timber, water and minerals✓ /conserves valuable resources
- Increases economic security by tapping a domestic source of materials✓
- Prevents pollution by reducing the need to collect new raw materials✓
- Saves energy✓
- Helps create jobs in the recycling and manufacturing industries ✓

Mark first TWO only (Any 2) (2)

2.1.5



2.2
- Fertilizers are washed into water bodies when it rains✓ /excessive irrigation
- And cause eutrophication✓
- The excess nutrients✓ in the fertilizers
- Cause an algal bloom✓
- The algae block out the sunlight✓
- And the water plants cannot photosynthesis✓

- Less oxygen is released into the water✓
- Plants die and bacteria cause decay✓
- This removes more oxygen from the water✓
- Other organisms then also die✓
- Due to the reduced water quality (Any 5) **(5)**

2.3 2.3.1 Logistic growth curve✓/S – shaped (1)

2.3.2
- The population numbers were way below the carrying capacity ✓of the habitat
- And the population had already established itself in the habitat ✓

OR

- Conditions for reproduction were favourable ✓
- And environmental resistance was low ✓ (2)

2.3.3 Competition for:
- Food ✓/water
- Shelter✓/ space
- Mating partners✓

Mark first TWO only (Any 2) (2)

2.3.4
- Disease could've spread through the population✓
- Predators could've been introduced into the game farm✓
- Hunting or poaching may have taken place✓

Mark first ONE only (Any 1) (1)

2.3.5 ± 110 impalas ✓ (1)

2.3.6 The impala population seems to fluctuate around this number✓ and then stabilizes in the last two years ✓ (2)

2.3.7
- Initially the impala population would decrease ✓
- this means there would be increased competition ✓ amongst the lion population for food

- Causing the number of lions to decrease ✓
- This would allow the impala population to recover ✓/the numbers of impala would increase
- Increasing the amount of food available for the lion population ✓ (Any 4) (4)

(13)

2.4 2.4.1 (a) B✓ (1)
(b) A✓ (1)
(c) B✓ (1)

2.4.2 A – Cnidaria✓
B – Arthropoda✓/ Annelida/ Chordata (2)

2.4.3 A✓ (1)

2.4.4 **X** – mesoderm✓
Y – coelom✓ (2)

2.4.5 The digestive tract is divided into specialized compartments✓ that allow for better digestion and absorption of nutrients in food✓ (2)

(10)

2.5 2.5.1 Both are large cities✓ that produce significant amounts of pollution✓ (2)

2.5.2 $\frac{13 - 3}{3}$ x 100✓/ $\frac{10}{3}$ x 100
3,34✓ x 100 = 334✓% increase (3)

2.5.3
- Closer to the centre of town in Pietermaritzburg and Bloemfontein there are fewer numbers✓ of moss plants growing due to high levels of pollution✓ in the environment/ the further away from the centre of town in Pietermaritzburg and Bloemfontein there are greater numbers of moss plants growing due to low levels of pollution in the environment
- There are large numbers✓ of moss plants growing close to the centre of town in Wartburg due to low levels of pollution✓ in the environment
- the numbers of moss plants remain constantly high✓ the further away from the centre of town Any 4 (4)

(9)

[50]

QUESTION 3

3.1 3.1.1 Composition of the test specimen✓ (1)

3.1.2
- Same amount of milk✓/agar/ garlic extract
- Same type of agar✓
- Same period/time ✓ to do the investigation
- Recordings done at the same time every day✓
- Same method of measuring the results✓
- Same environmental conditions✓/temperature

Mark first TWO only (Any 2) (2)

3.1.3
- The cooler temperature✓
- Prevents the growth of any other bacteria✓ that may occur in the environment (2)

3.1.4
- Repeat the investigation ✓
- Increase the number of test tubes used in the investigation ✓ (2)

3.1.5
- Petri dish **C** with milk, *E. coli* specimen and garlic extract did not show any signs of bacterial growth. ✓
- This is due to the presence of *allicin* ✓/antimicrobial substance in the garlic extract
- Which destroyed the bacteria ✓ hence there was no growth in Petri dish **C**. (3)

(10)

3.2 3.2.1 Insect pollination✓ (1)

3.2.2 D✓ (1)

3.2.3 Gynoecium✓/pistil (1)

3.2.4 a) C✓ (1)
b) D✓ (1)

3.2.5 Cross-pollinated ✓ (1)

3.2.6

Insect pollinated flower	Wind pollinated flower
Large conspicuous flowers✓	Small inconspicuous flowers✓

3.3 3.3.1 (a) D ✓ (1)
(b) A ✓ (1)
(c) D ✓ (1)
(d) C ✓ (1)
(e) D ✓ (1)

3.3.2 Census ✓ / direct counting (1)

3.3.3
- Ensure that the gene pool will continue to the next generation✓./ ensure genetic variation in angiosperms
- Seeds provide food for the germinating seedling until roots and leaves are formed ✓
- Seeds provide food for other consumers✓
- Dispersal to new areas ✓
- Dormancy during unfavourable conditions ✓

Mark first THREE only (Any 3) (3)
(9)

3.4 3.4.1 There is a significant decrease ✓ in the number of species after agriculture ✓. (2)

3.4.2
- There is low species diversity due to monoculture.✓
- This affects the species diversity ✓
- As food sources ✓are affected.
- This has a negative effect on the food chain ✓
- And could cause the entire food web to collapse ✓ (4)

3.4.3 Plants ✓ (1)

3.4.4 It is a study that is done to an area to determine the level of change ✓/damage that humans have brought about in that area. It is important to determine how badly an area is affected so that measures ✓ can be put in place to rehabilitate or save ✓/protect what is left of that particular area. (3)
(10)

3.5 3.5.1 A unicellular organism that has no nucleus✓ or other nuclear bound organelles✓ (2)

3.5.2 **A** – Slime capsule✓
D – Nucleoid ✓/DNA (2)

3.5.3 Allows for movement so the bacterium can swim✓ (1)

3.5.4
- A plasmid (ring-shaped DNA) is removed from the bacterium *E. coli*✓
- Special enzymes/restriction enzymes are used to cut the plasmid DNA of *E. coli*✓
- A human gene of insulin is inserted into the plasmid✓ /*E. coli* DNA
- The plasmid and human gene of insulin join to form recombinant DNA✓
- The *E. coli* bacterium starts to reproduce✓
- producing many insulin producing bacteria✓
- The insulin is extracted✓
- purified and sold to treat diabetes✓ (Any 5) (5)

(10)

TOTAL SECTION B: 100
GRAND TOTAL: 150

