NATIONAL SENIOR CERTIFICATE

GRADE 10

NOVEMBER 2018

LIFE SCIENCES P2 MARKING GUIDELINE

MARKS: **150**

This marking guideline consists of 11 pages.

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 the 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 unrecognised 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 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 provided it was accepted at the memo discussion meeting.

14. **If only letter is asked for and only 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 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. **Changes to the marking guideline**

    No changes must be made to the marking guideline without consulting the examiner.

SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	B ✓✓		
	1.1.3	A ✓✓		
	1.1.4	D ✓✓		
	1.1.5	C ✓✓		
	1.1.6	A ✓✓		
	1.1.7	C ✓✓		
	1.1.8	C ✓✓		
	1.1.9	A ✓✓		
	1.1.10	D ✓✓	(10 x 2)	(20)
1.2	1.2.1	Palaeontology ✓		
	1.2.2	Pangea ✓		
	1.2.3	Edaphic ✓		
	1.2.4	Heterotrophic / Consumers ✓		
	1.2.5	Ecosystem ✓		
	1.2.6	Wetland ✓		
	1.2.7	Altitude ✓		
	1.2.8	Decomposers ✓	(8 x 1)	(8)
1.3	1.3.1	BOTH A AND B ✓✓		
	1.3.2	NONE ✓✓		
	1.3.3	A only ✓✓	(3 x 2)	(6)
1.4	1.4.1	Monera ✓		(1)
	1.4.2	Plantae ✓		(1)
	1.4.3	Prokaryote ✓		(1)
	1.4.4	Eukaryote ✓		(1)
	1.4.5	Eukaryote ✓		(1)
	1.4.6	Unicellular ✓		(1)
	1.4.7	Multicellular ✓		(1)
	1.4.8	Saprophytic ✓		(1)
	1.4.9	Autotrophic ✓		(1)
	1.4.10	<u>Paramecium</u> <u>cordatum</u> ✓ (**MUST be underlined separately)**		(1)
1.5	1.5.1	A – Nitrates ✓ B – Ammonia ✓ C – Nitrites ✓		(3)
	1.5.2	Denitrification ✓		(1)
	1.5.3	Legumes ✓		(1)
	1.5.4	Lightning ✓		(1)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1
- Sugar ✓
- Bread ✓
- Pasta ✓
- Soda drinks ✓
- Candy ✓ **(Mark first TWO only)** (Any 2 x 1) (2)

2.1.2 Trans fats ✓ (1)

2.1.3 Most people believe you must stay away from saturated fats ✓
But Dr Sinatra promotes saturated fats ✓ / He says we should rather stay away from sugar (2)

2.1.4
- The build-up of fatty deposits/ cholesterol on the artery wall causes them to become narrow ✓
- This is called atherosclerosis ✓
- This causes blood clots which block the arteries ✓
- The blood cannot flow through ✓
- Heart muscle served by the artery dies from lack of oxygen ✓
- causing a heart attack. (Any 3 x 1) (3)

2.2 2.2.1 An area with a distinct climate ✓ together with the plants and animals that live there ✓ (2)

2.2.2 C – Grasslands ✓
D – Nama Karoo ✓ (2)

2.2.3 (a) B ✓ (1)
(b) E ✓ (1)

2.2.4 Cool, wet winters ✓ Hot, dry summers ✓ (2)

2.2.5

Forest	Grassland
Thick humus layer ✓ Thin litter layer ✓ of fallen debris like leaves etc. Fertile ✓	Thin humus layer / Sandy ✓ Thick litter layer ✓of fallen debris like leaves etc. May be infertile ✓ in many forests although deciduous forests are fertile

(Any one difference) **Mark first ONE only** (2)

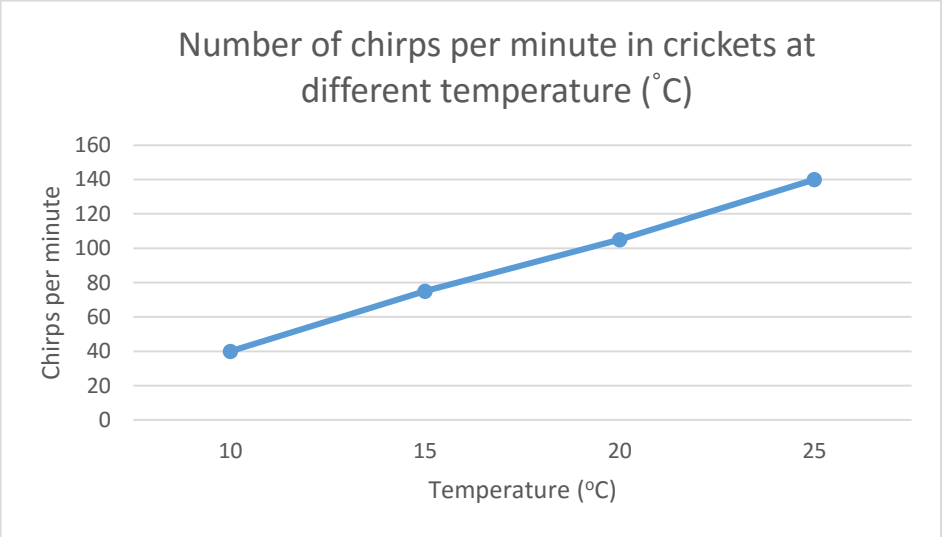
2.2.6
- Thick cuticle / small leaf size ✓ to prevent water loss ✓
- Leaves reduced to thorns / spines ✓ to prevent evaporation of water ✓
- Retain water in their leaves ✓ to prevent desiccation / drying out ✓
- Short growing season ✓ so survive dry periods as seeds ✓

(Any ONE) **Mark first ONE only** (2)

2.3 2.3.1 To determine if temperature ✓ affects the number of chirps per minute in crickets ✓ (2)

2.3.2 Size of the boxes ✓
Environmental conditions ✓ (learners may also list an environmental condition but only one mark is awarded regardless of the number of conditions they list)
Amount of food / water ✓
The person recording the chirps ✓ / method of recording the number of chirps
(Mark first TWO only) (Any 2 x 1) (2)

2.3.3



Mark Allocation

Heading	✓
Type of graph	✓
Y-axis label and scale	✓
X-axis label and scale	✓
Plotting: 1 – 3 points correct	✓
4 points correct	✓✓

(6)

2.3.4 - Repeat the experiment ✓
- Use a larger sample size ✓ (2)

2.3.5 Summer ✓
The temperatures are higher ✓ / crickets chirp more at high temperatures. (2)

2.3.6 Nocturnal ✓ (1)

2.4 2.4.1 The direction of the flow of energy ✓ (1)

2.4.2 Locust ✓ (1)

2.4.3 - At each trophic level energy is lost ✓
- Through respiration / reproduction / excretion ✓
- Therefore, the next trophic level will receive less energy ✓ (3)

[40]

QUESTION 3

3.1 3.1.1 Biogeography ✓ (1)

3.1.2 Gondwanaland ✓ (1)

3.1.3 The fossils of Mesosaurus / Glossopteris / Cynognathus ✓
Are found on both South America and Africa ✓ (2)

3.1.4 Glossopteris ✓ (1)

3.1.5 Glossopteris ✓ (1)

3.1.6
- The continents are situated on large tectonic plates ✓
- These plates are moving ✓
- because of molten rock in the Earth's mantle ✓
- as the plates move apart they cause the continents to move
- apart ✓ (Any 3 x 1) (3)

3.2 3.2.1 Estcourt / Mooi River ✓ (1)

3.2.2 Grahamstown ✓ (1)

3.2.3 G ✓ (1)

3.2.4
- The coelacanth was thought to be extinct ✓ for 70 my
- only fossils of the coelacanth had been found ✓
- Until a living specimen was found ✓ off the coast of East London and later on the KwaZulu-Natal coast. (3)
-

3.2.5
- The coelacanth dies and sinks to the bottom of the ocean ✓
- Mineral salts in the water also settle to the bottom ✓
- Soft body parts decay ✓ leaving only bones
- Mineral salts filter into the bones of the organism ✓
- Turning it into stone ✓ / this is called petrification
- Layers of sediment are deposited on top over the years ✓
- As the layers pile up their weight presses down on the older ones which turn into rock. ✓
- Alternatively, the bones may completely decay leaving a cast of the organism. ✓
- The void left behind may then fill with minerals making a stone replica of the organism. ✓ (5)

3.2.6 Radiometric ✓ dating
Relative ✓ dating (2)

3.2.7 Some organisms decay too quickly ✓ to fossilise
Only organisms covered in sediment fossilise quickly ✓
Soft bodied organisms do not fossilise ✓ as they decay too quickly

(Mark first TWO only) (Any 2 x 1) (2)

3.2.8 Source of income for area ✓
Source of employment for locals ✓ (may give examples)
Education about fossils ✓

(Mark first TWO only) (Any 2 x 1) (2)

3.3 3.3.1 Million Years Ago ✓ (1)

3.3.2 245 ✓ mya ✓ (accept 245 – 250 mya) (2)

3.3.3 Era – Cenozoic ✓
Period – Quarternary ✓ (2)

3.3.4 500 – 440 ✓ mya = 60 ✓ mya ✓ (3)

3.3.5 Pennsylvanian ✓ (1)

3.3.6 Cambrian Explosion ✓ (1)

3.3.7 Cretaceous ✓ (1)

3.3.8 **Learner must only describe ONE theory. Mark first theory described.**

Volcanic activity ✓- around India
- released dust particles into the atmosphere ✓
- caused global cooling ✓

OR

Asteroid impact ✓ - large dust clouds blocked out the sun ✓
- caused global climate change ✓

OR

Continental drift ✓ - as continents move away from each other ✓
- caused climate change ✓ (3)

[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

Pathway of the Red Blood Cell (Rbc)

- This is called the pulmonary circuit / circulation ✓*
- When right atrium contracts ✓
- deoxygenated blood/rbc ✓ is pumped
- through the tricuspid valve ✓
- into the right ventricle. ✓
- When the right ventricle contracts ✓
- the blood is forced through the semi-lunar valves ✓
- into the pulmonary artery. ✓
- The pulmonary artery branches to the right and left lung. ✓
- The arteries branch into smaller arterioles. ✓
- transporting the blood/ rbc to the lungs. ✓
- In the lung the blood vessels branch to form the capillaries of the lung ✓
- The capillaries reform to form venules which form larger veins ✓
- The oxygenated blood travels along the pulmonary veins ✓ from each lung
- The blood from the right and left lung enters the left atrium ✓

Compulsory mark** **Max. any 10 + 1 (11)

Difference between Arteries and Veins

- Arteries have a thick layer of smooth muscle tissue ✓ while veins have a thinner smooth muscle layer. ✓
- Arteries do not have valves ✓ while veins have valves. ✓
- Arteries have a smaller lumen ✓ while veins have a large lumen ✓
- Arteries carry blood away from the heart ✓ while veins carry blood to the heart. ✓
- The blood in arteries is under pressure ✓ while the blood in veins is not under pressure. ✓

(Any 3 x 2) **Max. 6** (6)

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

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance (R)	Logical sequence (L)	Comprehensive (C)
Generally	All information provided is relevant to the topic.	Ideas are arranged in a logical/cause-effect sequence.	All aspects required by the essay have been sufficiently addressed.
In this essay	Only information relevant to pathway of the red blood cell and differences between arteries and veins.	Information regarding the pathway of the red blood cell is given in a logical sequential manner.	All aspects (pathway of the red blood cell and difference between arteries and veins) attempted and at least **8/11** correct points on pathway of red blood cell, **4/6** correct points on differences between arteries and veins.
Mark	1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150