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Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2022

LIFE SCIENCES P2
MARKING GUIDELINE

MARKS: 150

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This marking guideline consists of 10 pages.

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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 provincial marking guideline discussion meeting.

14. **If only the letter is asked for but only the name is given (and vice versa)**
    Do not credit.

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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.

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SECTION A

QUESTION 1

1.1	1.1.1	D ✓✓		
	1.1.2	B ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	C ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	C ✓✓		
	1.1.9	D ✓✓	(9 x 2)	(18)
1.2	1.2.1	Asymmetry ✓		
	1.2.2	Sporophyte ✓		
	1.2.3	(Anopheles) mosquito ✓		
	1.2.4	androecium ✓		
	1.2.5	Biological control ✓/ Biocontrol		
	1.2.6	Mutualism ✓		
	1.2.7	Poaching ✓		
	1.2.8	Monoculture ✓	(8 x 1)	(8)
1.3	1.3.1	A ONLY ✓✓		
	1.3.2	NONE ✓✓		
	1.3.3	BOTH A and B ✓✓	(3 x 2)	(6)
1.4	1.4.1	Plantae ✓		(1)
	1.4.2	Charophytes, Bryophytes, Pterophytes, Gymnosperms (1–3 correct) ✓ 4 correct ✓✓		(2)
	1.4.3	350 ✓ MYA		(1)
	1.4.4	Bryophytes ✓		(1)
	1.4.5	(a) D ✓		(1)
		(b) A ✓		(1)
	1.4.6	Algae ✓		(1)
1.5	1.5.1	Predator-Prey ✓ / Predation		(1)
	1.5.2	(a) The maximum population size that an ecosystem can support ✓✓		(2)
		(b) Selectively killing organisms to reduce their population size ✓✓ **OR** Removal of animals of inferior quality/to old for breeding from a herd/flock.		(2)

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1.5.3	A ✓		(1)
1.5.4	1990 ✓ and 1995 ✓		(2)
1.5.5	1995 ✓		(1)
1.5.6	Disease ✓ Competition for food ✓/ water/ space	(Any 1 x 1)	(1)
		TOTAL SECTION A:	**50**

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QUESTION 2

2.1 2.1.1 Spermatophytes ✓ / Angiosperms (1)

2.1.2 (a) Anther ✓

(b) Corolla ✓

(c) Stigma ✓ (3)

2.1.3 B, C, F,G (1–3 correct) ✓ (All 4 correct) ✓✓ (2)

2.1.4 1 ✓ (1)

2.1.5 Their stigmas are large ✓/feathery
The stamens are long ✓/protrude out of the flower
Anthers are large ✓ to produce lots of pollen (Any 2 x 1) (2)

2.1.6 Fruit ✓
Flowers ✓ (2)

2.2 2.2.1 Myobacterium ✓ (1)

2.2.2 It does not have a (membrane bound) nucleus. ✓ (1)

2.2.3 (a) slime capsule ✓

(b) flagella ✓

(c) nucleoid / DNA ✓ (3)

2.2.4 A person is given a weak strain of the bacteria ✓
the body will produce antibodies to fight the infection ✓
The antibodies will protect them against a new/stronger infection of the same germ ✓ (3)

2.2.5

Virus	Bacteria
Non-living ✓	Living ✓
Acellular ✓	Prokaryotic ✓
Protein coat ✓	Cell wall/membrane ✓

Table ✓ + (Any 1 x 2) (3)

2.2.6 HIV lowers the body's immunity ✓ /white blood cell count therefore it cannot defend the body against TB ✓ (2)

2.3 2.3.1 Fungi grow best in dark ✓ and warm places ✓ (2)

2.3.2 Treatment ✓ on bread (1)

2.3.3 It is the control ✓ (1)

2.3.4 Repeat the investigation ✓ / increase the sample size (1)

2.3.5 Sugar provides energy ✓/food for fungi therefore more food will allow fungi to grow faster ✓ (2)

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2.3.6 Use spray bottle to apply treatments evenly ✓
Place bread in zip lock bags ✓
All slices placed in cupboard ✓
All left for one week ✓ /same time
Same sizes slices of bread ✓
Same quantity (200 mℓ) of treatment (Any 2 x 1) (2)

2.4 2.4.1 Animalia ✓ (1)

2.4.2 Cnideria ✓ (1)

2.4.3 Bilateral ✓ (1)

2.4.4 (a) Ectoderm ✓

(b) Endoderm ✓ (2)

2.4.5 Earthworms tunnel through the soil ✓ which aerates the soil ✓ / allows water to infiltrate
They eat decomposed dead organic material ✓
The faeces of earthworms are rich in nutrients for plants and enrich the soil ✓ (4)

2.4.6 Cnideria:
- They are **sedentary/sessile animals** ✓ therefore **radially symmetry** allows them to **obtain food and ward off danger coming from any directions** ✓
- They have **nerves located over the entire body** surface ✓/ there is no cephalization. This allows them to **sense equally all around.** ✓
- The jelly like **mesoglea** ✓ **has a network of nerves** that enables coordinated movement. ✓ (Max. 2 x 2)

Annelids:
- They are **very active and move into new environments** ✓ with new dangers frequently.
  Therefore, they **show cephalization** ✓/ need sense organs accumulated in the area that enters the new environment first
- Since free-living species **move actively** from place to place they **need muscles** ✓
  they have **developed a mesoderm** ✓ from which muscle originate / They are **triploblastic.**
- For muscle to work effectively, the body wall of these organisms needs to work independently from gut walls. ✓ The **development of a coelom** ✓ separated the body wall from the gut wall.

(Max. 2 x 2) (8)
[50]

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QUESTION 3

3.1 3.1.1 It warms up the atmosphere ✓ to sustain life. ✓ (2)

3.1.2 Deforestation ✓
Burning of fossil fuels ✓ / driving cars / production in factories
Large scale cattle farming ✓ / rice paddies (Any 2 x 1) (2)

3.1.3 The carbon dioxide concentration in the atmosphere increased ✓
This caused more heat/radiation to be absorbed/trapped by the atmosphere ✓
and less heat/radiation to be reflected ✓ (3)

3.1.4 Food security is decreased ✓*
Changes in rainfall pattern cause:
- Desertification ✓
- Increased flooding ✓
- and wildfires ✓
- which increases soil erosion ✓ resulting in:
  - fewer crops to be planted ✓
  - lower crop yields ✓
  - less food for livestock ✓
- Higher environment temperature negatively affects livestock ✓ / crops
- These factors further decrease food availability ✓
- Food becomes more expensive ✓

✓*Compulsory mark + any 4 (5)

3.2 3.2.1 (a) Geometric ✓/ logarithmic / accelerating growth (1)

(b) Decelerating growth ✓ (1)

3.2.2 Logistic ✓ growth form (1)

3.2.3 (a) D ✓ (1)

(b) B ✓ (1)

3.2.4 - Rabbit population had reached carrying capacity ✓
- Environmental resistance occurs ✓/density dependant factors prevent population from increasing/ food/ space/water becomes limited
- This prevent population from increasing further ✓ (3)

3.2.5 Mark-recapture ✓ method (1)

3.2.6 $\left.\frac{40 \times 25}{4}\right\}$ ✓ ✓ = 250 ✓ (3)

3.2.7 The sample may have been taken from an area the rabbits prefer ✓ / don't prefer
Tags may have fallen off ✓ (Any 1 x 1) (1)

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3.3 3.3.1 A group of organisms of the same species, occupying the same habitat at the same time, and capable of random breeding. ✓✓ (2)

3.3.2 4% ✓ (1)

3.3.3 5–9 years old ✓ (1)

3.3.4 Females ✓ (1)

3.3.5 Nigeria ✓ (1)

3.3.6 - High birth-rate ✓/ High number of younger people in population
- High death rate ✓ / Less older people in population /Short life expectancy (2)

3.3.7 - Disease ✓
- Lack of food ✓
- Lack of water ✓
- Lack of space ✓ (Any 1 x 1) (1)

3.3.8 **Explanation must be for answer given in QUESTION 3.3.7**
Disease – humans have developed medical technology ✓ so there are fewer deaths ✓
Lack of food – mass produce crops ✓ / monoculture / GM foods to increase crop production ✓
Lack of water – building of dams ✓ to store water for when needed ✓
Lack of space – building high rise apartment building and skyscrapers ✓ / creating cities and towns so that people can live in a smaller area of space ✓ (Any 1 x 2) (2)

3.4 3.4.1 Mercury ✓
Asbestos ✓
Brine ✓
Fly ash ✓
Waste oils ✓
Sewage ✓ (Any 2 x 1) (2)

3.4.2 Methane ✓ (1)

3.4.3 $\frac{10}{100}$ ✓ x 54 200 000 ✓ = 5 420 000 ✓ tons / 5,42 million tons (3)

3.4.4 - Disease carrying animals are attracted to the area by dumpsites ✓
- Dumpsites release dust and unpleasant smells ✓
- Decomposition of pollutants release toxic substances ✓
- Release of methane gas could cause explosions ✓ (Any 2 x 1) (2)

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3.4.5 - Dig a hole where solid waste is dumped ✓ and then cover it with soil. ✓
- To prevent the toxic leachate ✓ from reaching the groundwater, a plastic liner ✓ is placed under the dumpsite area.
- Covering of the old landfill site with clay soil, ✓ and then it is covered with topsoil. ✓ (Any 2 x 1) (2)

3.4.6 - **Re-using** ✓ waste products include re-using plastic shopping bags, re-using glass and plastic containers – this helps to reduce the waste produced. ✓
- **Recycling** ✓ waste provides employment, reduces the use of raw materials and energy pollution. ✓
- **Reducing waste** ✓ by charging people extra if they generate more waste ✓
- **Fines** for people that do not separate the waste into different bins ✓ To encourage citizens to manage waste more efficiently ✓
- **Partnership** with recycling companies ✓ for improved collection of different wastes ✓
- **Educate** people to use organic waste ✓ for example to make compost ✓ (Any 2 x 2) (4)

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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