Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 10

JUNE 2025

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AMENDED LIFE SCIENCES MARKING GUIDELINES

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MARKS: **150**

These marking guidelines consist of 12 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when the maximum mark 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 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.

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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-recognized 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 the answer fits into the correct sequence of questions but the wrong number is given, it is acceptable. Indicate that the candidate's numbering is wrong.

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 are given in terminology**
    Accept, provided it was accepted at the Provincial Marking Guideline Discussion Meeting Constitution.

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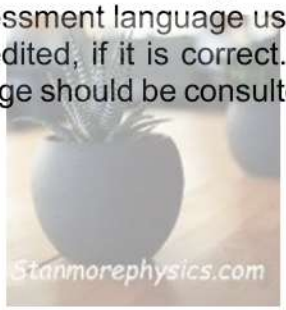
14. **If only a letter is asked for and only name is given (and vice versa)**
No credit.

15. **If units are not given in measurements**
The marking guideline will allocate marks for units separately, except where it is already given in the question.

16. Be sensitive to the **sense of an answer, which may be stated in a different way**.

17. **Caption**
Credits will be given for captions to all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.

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 language



SECTION A

QUESTION 1

1.1 1.1.1 B ✓✓

1.1.2 B✓✓

1.1.3 D✓✓

1.1.4 D✓✓

1.1.5 C✓✓

1.1.6 B✓✓

1.1.7 D✓✓

1.1.8 D✓✓

1.1.9 C✓✓

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1.2 1.2.1 Transpiration✓

1.2.2 Foramen magnum ✓

1.2.3 Cuticle✓

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1.2.4 Amino acids ✓

1.2.5 Haemoglobin ✓

1.2.6 Tonoplast✓/ Vacuolar membrane

1.2.7 Stoma✓/stomata

1.2.8 Diffusion✓

1.2.9 Appendicular skeleton✓ (9 x 1) **(9)**

1.3.1 B only✓✓

1.3.2 Both A and B✓✓

1.3.3 A only✓✓ (3 X 2) **(6)**

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1.4	1.4.1	(a)	Mitochondrion✓	(1)
		(b)	Chloroplast✓	(1)
	1.4.2	(a)	**Y**✓	(1)
		(b)	**Y**✓	(1)
		(c)	**X**✓	(1)
	1.4.3	(a)	Stroma ✓	(1)
		(b)	Granum✓/grana	(1)
		(c)	Starch granule✓	(1)
		(d)	Cristae✓	(1)
	1.4.4		Cellular respiration✓	(1)
		0		
			Photosynthesis✓.	(1)
				(11)
1.5	1.5.1		A – Root hair✓ /epidermal cell	(1)
			B – Cortex✓/ Parenchyma	(1)
	1.5.2		Finger-like projections/ elongated✓ Thin cell wall ✓ Cell wallwithout cuticle✓and Permeable cell wall✓ Cell sap with a low water concentration/potential ✓ Large vacuole ✓ Any 2	(2)
	1.5.3		Root✓	(1)
	1.5.4		cell to cell via cytoplasm✓ / vacuole/plasmodesmata /symplast Cell to cell via cell walls / through intercellular air spaces/apoplast Cell to cell through osmosis (any 1)	(1) **(6)**

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

2.1 2.1.1 Potometer✓ (1)

2.1.2 To determine the effect of temperature on the rate of transpiration✓ (1)

2.1.3 - The speed of movement of the air bubble will be reduced/ slower✓ (1)

2.1.4 - Vaseline prevents transpiration✓at the ventral surfaces
- by blocking the stomata✓ (2)

2.1.5 To allow it to acclimatize to the environment✓/ temperature (1)

To allow transpiration to start✓

2.1.6 - Cut the shoot from a plant under water✓ to prevent air from entering the xylem✓

- set up apparatus under water✓ to prevent air bubbles from entering✓
- Make sure the apparatus is airtight using Vaseline to seal any gaps✓
  If air enters the apparatus the readings will be affected✓
- Dry the leaves of the shoot✓
  Any moisture present on the leaves will affect the rate of transpiration✓
  - Cut the shoot at a slant✓ an angle to increase surface area✓/ keeping xylem intact/ preventing damage to the xylem
- Do not cut through the xylem✓ to allow movement of water

Reliability

Repeat the experiment✓, then use average results✓

Set up more than one apparatus✓ to increase the sample size✓

(4)

Any (2 x 2)

(10)

(Mark first TWO only)

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2.2 2.2.1 Mitosis✓ (1)

2.2.2 A- Anaphase✓
B- Interphase✓/(prophase)
C- Prophase✓
D- Metaphase✓ (4)

2.2.3
- Growth✓/ Increase in size of the organism
- Replacement of dead cells✓
- Responsible for asexual reproduction in certain plants and animals✓
- Repairs damaged tissues✓ Any (3 x 1) (3)

(Mark first THREE only)

2.2.4
- Spindle fibres contract ✓
- Chromosomes split at the centromere ✓
- sister chromatids pull apart ✓
- to opposite sides of the cell (poles)✓

(Mark first THREE only) (3)
(11)



2.3.1 Diagram I – plant✓cell (1)
Diagram II – animal ✓cell (1)

2.3.2 D✓ – vacuole✓ (2)
Or vacuole✓✓

2.3.3 A – cell membrane ✓ (1)
B – nucleus✓/nuclear membrane/pore (1)
C – cell wall✓ (1)

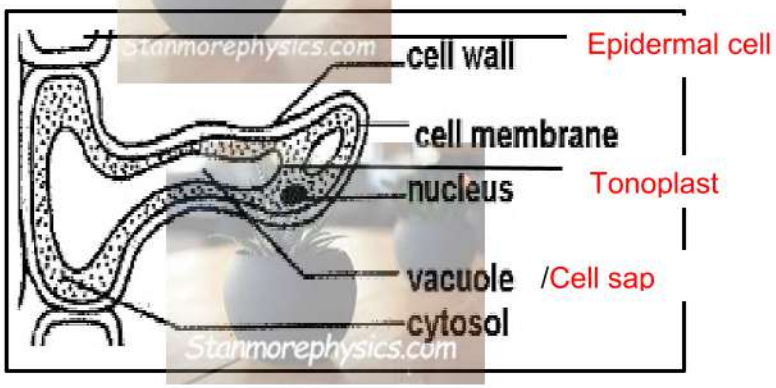
2.3.4
- Selective membrane✓
- allows water and mineral salts to pass through✓ and
- prevent larger molecules from enter✓ (3)

2.3.5 Magnification = Image/ Actual

= 15✓ mm / 0,015✓ mm = (x) 1 000✓ (3)
(13)

2.4 2.4.1 B – Parenchyma✓ (1)
C – Collenchyma✓ (1)

2.4.2 **Epidermal cell with root hair**



Criteria for assessing the drawing
Caption (**C**)✓
Root hair drawn(**D**)✓
Any two correct labels(**L**)✓ ✓ (4)

2.4.3

Xylem vessels	**Phloem sieve tubes**
Conduct water✓ and dissolved mineral salts	Conduct dissolved food✓
Walls are thickened✓ /lignified	Walls are thin✓ /made up of cellulose
Cross walls perforated /✓absent	Sieve plates present✓
Transport is from root to leaves✓	Transport is from leaves to roots✓
Involved in upward movement✓	Both upward and downward movement✓

1 table + Any(2 x 2) (5)
(11)



2.5.1 Fatty acids✓ and glycerol✓ (2)

2.5.2 Scurvy✓ (1)

2.5.3 B✓ (1)

2.5.4 Cereal B has the least amount of vitamin C✓ (1)
(5)
[50]

QUESTION 3

3.1 3.1.1 Carcinogens✓/carcinogenic (1)

3.1.2 Cancer✓ (1)

3.1.3
- Tar in cigarettes✓
- Viruses✓
- Certain diet✓
- Life style✓
- radiation from the sun✓ Any

(3)
(Mark first THREE only)

3.2 3.2.1 (a) Substrate✓ molecule (1)

(b) Enzyme-Substrate✓ complex (1)

(c) Product(s)✓ (1)

3.2.2 Enzyme are substrate-specific ✓/
enzymes are specific to the reaction they catalyse (1)
-Reusable✓/does not change after the reaction **(4)**

3.3 3.3.1 A group of cells that have the same structure✓ and
are specialised to perform a specific function✓. (2)

3.3.2 **B**-Cuboidal epithelium✓
C-Ciliated columnar epithelium✓ (2)

3.3.3 T✓

	Tissue B	Tissue C
	Cube-shaped cells✓	Long narrow cells✓
	No goblet cell✓	Has goblet cells✓
	Have no cilia✓	Have cilia✓

1 table + Any (1 x 2) (3)

3.3.4
- **A** is attached to the bones✓
- It is responsible for voluntary movements✓ (2)

3.3.5 Heart (muscles)✓ (1)
(10)

3.4	3.4.1	**1-**Cuticle✓		(1)
	3.4.2	- Allows light into leaf✓ - Protect leaf cells✓ - Prevents water loss✓/ Is waterproof **(Mark first TWO only)**	Any	(2)
	3.4.3	Mesophyll✓tissues		
	3.4.4	- Elongated✓ deeper penetration of light✓ - thin-walled cells✓ allow for easy diffusion of substances✓ - Have many chloroplasts✓ for maximum absorption of sunlight✓ / photosynthesis - Has closely-packed cells✓ to increase surface area for absorption of sunlight✓ Directly below epidermis✓ for easy access to light✓ Arranged at right angles to the upper epidermis✓ to allow maximum number of cells to fit✓. Any (2 x2) **(Mark first TWO only)**		(4) **(8)**
3.5	3.5.1	Cranium✓/ skull		(1)
	3.5.2	Axial skeleton✓		(1)
	3.5.3	Ligament✓		(1)
	3.5.4	A✓ Cranium✓		(2)
	3.5.5	- Framework✓ /structure for support - Protects✓ delicate organs - Muscle attachment✓ - Bones in the ears for hearing✓ - Store minerals✓ - Manufacture blood cells✓ - allows for movement✓ (Mark first THREE only)	Any	(3)
	3.5.6	Femur✓		(1)
	3.5.7	- To give support during pregnancy✓ - And allows passage of child during birth ✓		(2) **(11)**

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3.6 3.6.1 - To determine the effect of high temperature on a washing powder containing fat-digesting enzymes ✓✓ (2)

3.6.2 - Type/ colour of shirt✓
- Type of detergent✓
- Time for washing✓
- Same fat stain✓

(Any 2) (2)

3.6.3 - Serves as a control✓
- to compare the effect of high temperature on fat digesting enzymes✓
- To show that enzyme action is affected by high temperature and not any other factor✓

Any 2 (2)

3.6.4 To increase reliability✓ (1)

3.6.5 - Remove hair from the skins✓
- Making beer, wine and vinegar✓
- Making of chocolates and syrups✓
- For tenderising meat✓
- Manufacturing of baby foods✓
- Manufacturing of fruits✓
- In baking✓
- In the rubber industry✓
- It speeds up the rate of the reaction✓
- It lowers the activation energy✓
- It is involved in metabolic processes ✓/respiration /photosynthesis

Any 3 (3)

(Mark first THREE only)

3.6.6 Fat-digesting enzyme exposed to high temperatures failed to remove fat stain✓✓ (2)

(12)/

OR

High temperature denatures fat digesting enzyme thus preventing it from removing fat stains✓✓

TOTAL SECTION B: 100
GRAND TOTAL: 150

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