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

GRADE 10

LIFE SCIENCES

PAPER 1

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MARKING GUIDELINE

NOVEMBER 2024

Blue – Changes to Memo
Green – alternate answers that may be accepted but not in memo
Red – marking notes

MARKS: 150

These amended marking guidelines consist of 11 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.

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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-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 marking guideline 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 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 learner's 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.



SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	D✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	B✓✓		
	1.1.6	B✓✓		
	1.1.7	A✓✓		
	1.1.8	B✓✓		
	1.1.9	B✓✓		
	1.1.10	B✓✓	(10 x 2)	**(20)**

Answer is incorrect if 2 letters are written even if first is correct (e.g. C,D X)

1.2	1.2.1	Cancer✓		
	1.2.2	Osmosis✓		
	1.2.3	Red blood cell ✓ /erythrocyte		
	1.2.4	Cytokinesis✓		
	1.2.5	Vitamins✓		
	1.2.6	Micronutrients		
	1.2.7	Stomata✓ /stoma		
	1.2.8	Chlorenchyma✓		
	1.2.9	Vascular tissue✓	(9 X 1)	**(9)**

1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	B only✓✓		
			(3 X 2)	**(6)**

1.4	1.4.1	(a) 2✓	(1)
		(b) 1✓	(1)
		(c) 3✓	(1)
	1.4.2	(a) Xylem✓	(1)
		(b) Xylem✓	(1)
		(c) Spongy tissue/ spongy mesophyll/ Spongy tissue / spongy parenchyma	(1)
	1.4.3	1 - Vascular bundles/xylem/phloem arranged in a ring✓ 2 - Vascular bundles/xylem at the centre✓	
		OR	
		1 – no endodermis✓ 2 - endodermis✓	(2)

(8)

1.5 1.5.1 (a) Basement layer✓ (1)

(b) Columnar✓epithelium (1)

(c) Squamous✓ epithelium (1)

1.5.2 3✓ (1)

1.5.3 Goblet cell✓ (1)

1.5.4
- Dust particles/ micro-organisms/mucus will not be removed from the trachea✓
- causing lung infection✓/ person to cough (2)

(7)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1
- Presence of chloroplasts✓
- Presence of a cell wall✓

Any (1)

(Mark first ONE only)

2.1.2 (a) Transport of proteins✓/enzymes (1)

(b) Cellular respiration✓/ provides energy (1)

2.1.3 D✓ - nucleus✓

OR

E✓- mitochondrion✓

OR

F✓- chloroplast✓ (Any 1 x 2) (2)

(Mark first ONE only)

2.1.4 -To provide **<u>more</u>** energy✓
-needed for movement✓ (2)

2.1.5 -Chloroplast✓
-Mitochondrion✓
-Nucleus✓ Any (2)

(Mark first TWO only) **(9)**

2.2 2.2.1 (a) Beans✓
(b) Beans✓ (2)

2.2.2 Ice cream✓ (1)

2.2.3 $\frac{5000}{15000}$✓ X 100✓ = 33.33✓% (3)

(6)

2.3 2.3.1 Protein ✓ (1)

2.3.2 Contains C, H, O, N✓ (carbon, hydrogen, oxygen and nitrogen) (1)
Contains Nitrogen✓

2.3.3
- Source of amino acids✓
- Provide structure/support✓ forms cell membranes
- Involved in transport✓
- Allow movement as constituent of muscles✓
- Speeds up chemical reactions as enzymes✓
- Provide protection as antibodies✓
- Involved in coordination as hormones ✓
- Reserve source of energy✓ Any (2)

(Mark first TWO only)

2.3.4 2:1✓

2.3.5
- Enzymes denatured✓/lose their shape
- Active site damaged✓ at high temperature
- therefore, can no longer act on the substrate✓/ cannot perform their function (3)

(8)

2.4 2.4.1 (a) Hydrogen peroxide concentration✓ (1)
(b) Enzyme activity✓ (1)

2.4.2
- Decide on apparatus✓ /collect apparatus needed
- Decide on the concentrations of hydrogen peroxide to use✓
- Decide how the results will be recorded✓ Any (2)

(Mark first TWO only)

2.4.3
- Same amount /3 drops of dish washing liquid✓
- Same amount/ 1 drop of food dye✓
- Same time of observation ✓ /observed for 30 seconds Any (2)

(**Mark first TWO only)**
NOT (same) amount of potato

2.4.4 Hydrogen peroxide✓ (1)

2.4.5
- A control✓ / to compare
- To show that the oxygen bubbles✓are / enzyme activity is due to
- Catalase present in potato ✓
- which acts on hydrogen peroxide✓

OR

- A control✓ / to compare
- To show that in the absence of the potato there is no catalase✓
- to act on hydrogen peroxide✓
- therefore, no oxygen bubbles will be released✓ Any (3)

(10)

2.5	2.5.1	(a)	Chromatid✓	(1)
		(b)	Spindle fibre✓	(1)
	2.5.2	(a)	Forms spindle fibres✓	(1)
		(b)	Holds two chromatids together✓/ attaches to spindle fibre in mitosis/ metaphase	(1)
	2.5.3	(a)	3✓	(1)
		(b)	3✓	(1)
	2.5.4		- Centromere will not split✓ , - sister chromatids will not be pulled to the opposite poles✓, - daughter cells formed will not contain required chromosome number✓ /unequal chromosome number	(3) **(9)**
2.6	2.6.1		Distance moved by air bubble at different temperatures for 20 minutes✓/ over time	(1)
	2.6.2		Potometer✓	(1)
	2.6.3		To prevent air bubbles to block/get into xylem✓	(1)
	2.6.4		Higher temperature provided more (kinetic) energy✓ for faster movement/evaporation of water molecules✓ /increased transpiration	(2)
	2.6.5		Surface area will decrease✓ decreasing the rate of transpiration✓	(2)
	2.6.6		- High light intensity✓ - High wind velocity✓ - Low humidity✓ **(Mark first ONE only)**	Any (1) **(8)** **[50]**

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QUESTION 3

3.1 3.1.1 (a) Lumbar✓ vertebrae NOT lower back vertabrae (1)
(a) (b) Ilium✓ NOT hipbone (1)
(c) Sacrum✓ / coccyx (1)

3.1.2 Cranium✓ (1)

3.1.3 A✓
B✓
D✓ (2)

3.1.4
- Important for movement✓
- Protects (delicate) internal organs✓
- Provides support, strength and shape✓
- Storage of minerals✓
- Site for formation of red blood cells✓
- (Bone in ear) enable hearing✓
- Stores and releases fats✓

Any (4)
(Mark first FOUR only)

3.1.5 Foramen magnum✓ (1)

3.1.6 Allows (vertical) entry of the spinal cord into the skull✓ (1)
(12)

3.2

Tendons	**Ligaments**
Attach muscle to bone✓	Attach bone to bone✓
Made up of inelastic/ white fibrous connective tissue. ✓/ not able to stretch	Consist of elastic/ yellow, connective tissue✓ / able to stretch

(2 X 2) + 1 table **(5)**

3.3 3.3.1 Tissue specialised/differentiated to perform a specific function✓ (1)

3.3.2 (a) Xylem Tissue✓ (1)
(b) Sclerenchyma✓ (1)

3.3.3
- Provides support✓
- Allows gaseous exchange✓
- Packaging tissue✓ / fills in around other tissue
- Storage✓

Any (1)
(Mark first ONE only)

3.3.4
- No end walls✓
  forming continuous tubes for water movement✓
- Contain dead cells✓
  making them hollow to allow transport of water✓
- Presence of pits✓
  for lateral(sideway) water movement✓
- Lignified walls✓
  to provide support✓ / prevents walls from collapsing from the water pressure
- Joined end to end✓
  to make a continuous tube ✓
- Tube are hollow
- That allows for the smooth movement of water Any (2 X 2) (4)

(Mark first TWO only)

(8)

3.4

3.4.1 (a) Epidermal cell✓ / cell wall (1)
(b) Cell sap✓ vacuole (1)

3.4.2
- Large surface area✓
- Permeable cell wall✓
- Cell sap with high solute concentration✓/ lower water potential/ low water concentration compared to surrounding soil water
- Large vacuole✓ to store water (keep water potential of cytoplasm low)
- Thin cell wall ✓
- Numerous/many mitochondria✓ Any (2)

(Mark first TWO only)

3.4.3
- Water moves through the intercellular air spaces✓
- Water moves through cell wall, cell membrane and cytoplasm ✓ (2)

(*Do NOT accept Symplastic and Apoplastic as question asked learners to describe*)

3.4.4
- Soil water has lower water potential✓ (compared to the cell sap).
- Water moves out of the vacuole✓ by osmosis✓ to the soil.
- Part B/ root hair vacuole will shrink✓*

1 *compulsory + any 2 (3)

(9)

3.5
- Root pressure✓
- water entering the roots pushes water into the stem✓
- Capillarity✓
- of the water molecules causes water to move to a certain height within the xylem of the stem✓ / water moves due to adhesive and cohesive properties of water
- Transpiration pull✓
- suction force caused by loss of water vapour in the leaves pulls water from the xylem of the stem to the leaves✓ **(6)**

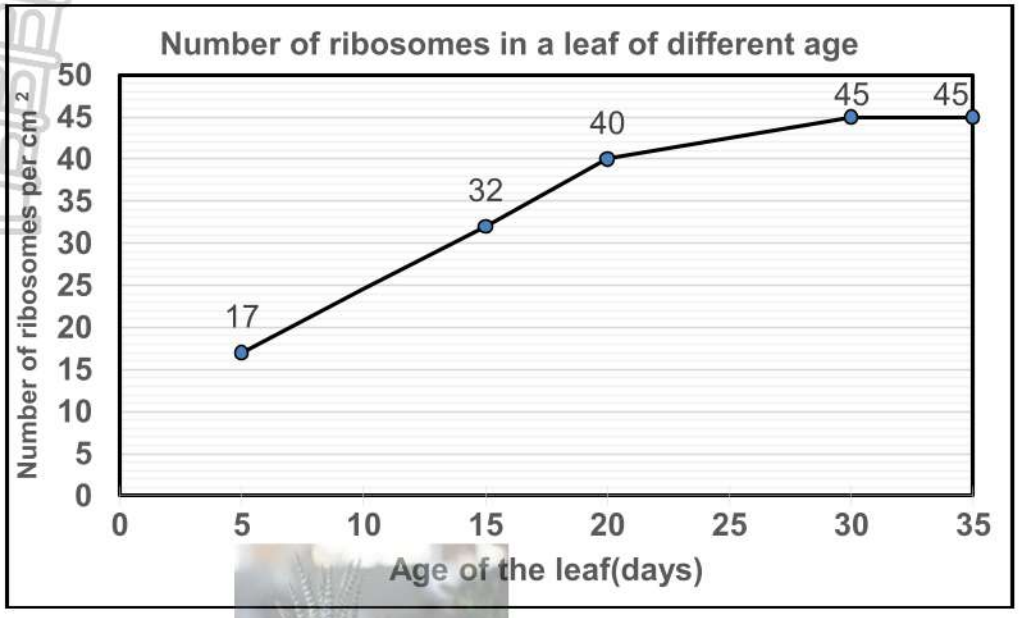
3.6 3.6.1
- As the age of the leaf increases (from 5 days to 30 days) the number of ribosomes also increases✓ then
- remains constant/ does not change from 30 to 35 days✓ (2)

3.6.2 45 – 17 = 28

$(\frac{28}{17}$ X 100)✓ = 164,71✓%/ 165 / 164,7 ANSWER SHOULD BE LEFT OFF AT 2 DECIMALS (2)

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3.6.3



RUBRIC FOR MARKING GRAPH

Caption of graph (both variables stated (**C**)	✓
Type of Graph (**T**)	✓
X-axis and Y-Axis label with units (**L**)	✓
Correct Scale for X- and Y-axis (**S**)	✓
Only 1-4 coordinates plotted correctly All 5 coordinates plotted correctly(**P**)	✓ ✓✓

(6)
(10)

C ✓ do not mark on grph, use letters to mark
T ✓
L ✓
S ✓
P ✓

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150