



Province of the  
**EASTERN CAPE**  
EDUCATION

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

# **NATIONAL SENIOR CERTIFICATE**

**GRADE 11**

**NOVEMBER 2024**

## **LIFE SCIENCES P1 MARKING GUIDELINE**

**MARKS: 150**

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This marking guideline consists 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.
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 national memo 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 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.

**SECTION A****QUESTION 1**

- 1.1 1.1.1 D ✓✓  
 1.1.2 C ✓✓  
 1.1.3 B ✓✓  
 1.1.4 A ✓✓  
 1.1.5 A ✓✓  
 1.1.6 C ✓✓  
 1.1.7 A ✓✓  
 1.1.8 D ✓✓  
 1.1.9 C ✓✓ (9 x 2) (18)
- 1.2 1.2.1 Chloroplast ✓  
 1.2.2 Intercostal ✓ muscle  
 1.2.3 Ureter ✓  
 1.2.4 Alveoli ✓  
 1.2.5 (Palisade) mesophyll / chlorenchyma ✓  
 1.2.6 Photolysis ✓  
 1.2.7 Pleural ✓ membrane  
 1.2.8 Oxygen ✓  
 1.2.9 Islets of Langerhans ✓ (9 x 1) (9)
- 1.3 1.3.1 B ✓✓ only  
 1.3.2 NONE ✓✓  
 1.3.3 BOTH A and B ✓✓  
 1.3.4 BOTH A and B ✓✓ (4 x 2) (8)
- 1.4 1.4.1 Trachae ✓ (1)
- 1.4.2 - Part D/ diaphragm contracts ✓  
 - increasing the volume of the thoracic cavity ✓ (2)
- 1.4.3 - The sides of the model is immovable ✓ / in the human chest the rib cage moves upwards and downwards  
 - The space between the lungs and wall of the thorax is very small ✓ / the model shows a large space between the balloons and glass jar  
 - In the body there is limited movement of lungs ✓ / pressure exerted on lungs / in the model there is a lot of space available for lungs to move / greater pressure is placed on balloons  
 - In the human body, the diaphragm is dome-shaped and flattens during inhalation. ✓ / In the model, the rubber sheet is flat and is pulled down to represent inhalation  
**(MARK FIRST TWO ONLY)** (2)

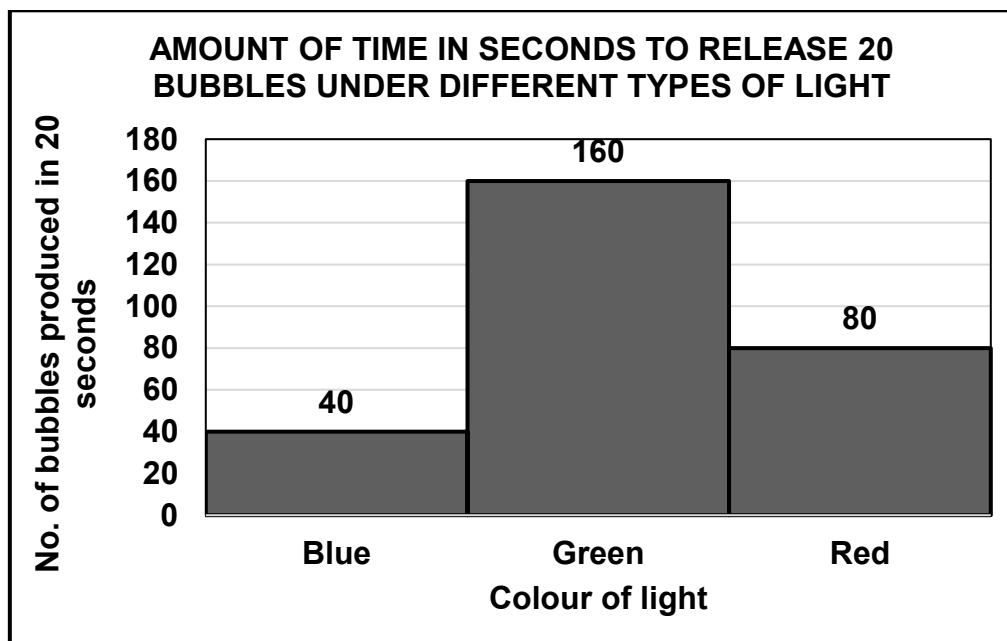
- 1.5 1.5.1 (a) Bronchus ✓ (1)
- (b) Rib ✓ (1)
- 1.5.2 • Well protected ✓  
The ribs and intercostal muscles protect the lungs from mechanical injury ✓
- Large surface area ✓  
Many alveoli are present that increase surface area for gaseous exchange to take place ✓
- Moist ✓  
Alveoli are lined with a mucous layer ✓
- Thin surface ✓  
Alveoli are only one cell layer thick ✓
- MARK FIRST TWO ONLY** (Any 2 x 2) (4)
- 1.5.3 (a) G ✓ – Larynx ✓ (2)
- (b) A ✓ – Trachea ✓ (2)

**[50]****TOTAL SECTION A: 50**

## SECTION B

## QUESTION 2

2.1 2.1.1



Criteria	Mark allocation
Correct type of graph (T)	✓
Caption of graph includes both variables (C)	✓
Correct scale for y-axis and equal width of bars (S)	✓
Correct labels on the x-axis and y-axis with correct unit on the y-axis (L)	✓
Plotting of bars correctly done for: (P)	
1–2 bars	✓
All 3 bars	✓

(6)

- 2.1.2
- Higher bubble production means a greater rate of photosynthesis ✓
  - thus greater plant growth ✓

(2)

2.1.3 Green : Red

160 : 80 ✓

2 : 1 ✓

(2)

2.1.4 Blue ✓ light

(1)

2.2 2.2.1

- Space in the thoracic cavity would be limited ✓
- Due to abdominal organs pushing into the thoracic cavity ✓
- Limiting the ability of the lungs to fully expand ✓

OR

- The thoracic cavity is no longer a closed system ✓
- When the diaphragm contracts the thoracic cavity will not expand ✓
- Pressure will not decrease in the thoracic cavity ✓
- And air will not be drawn into the lungs

(3)

- 2.2.2
- Carbon dioxide in the blood increased ✓ due to difficulty in breathing
  - Which was detected by (chemo) receptors of the aorta ✓/ carotid artery
  - Which stimulate the Medulla Oblongata ✓
  - to send impulses to heart muscle ✓
  - to increase (rate and depth of) the hearts contractions ✓ (5)
- 2.3 2.3.1 To determine if living organisms require oxygen for aerobic respiration. ✓✓ (2)
- 2.3.2 (a) Oxygen ✓ uptake (1)
- (b) Aerobic respiration ✓ (1)
- 2.3.3  $\frac{28-13}{13} \times 100$  ✓ ✓
- = 115,38% ✓ (3)
- 2.3.4
- Both flasks have the same amount of sodium hydroxide solution ✓
  - To ensure carbon dioxide absorption occurs equally in both flasks ✓

OR

- Both insect and glass beads have the same mass ✓
  - Therefore starting positions have the same pressure ✓
- (Mark first ONE only) (Any 1 x 2) (2)
- 2.4 2.4.1
- Pyruvate/ pyruvic acid is broken down ✓
  - Releasing hydrogen ✓ atoms and
  - carbon dioxide ✓
  - in the presence of oxygen ✓ (Any 3 x 1) (3)
- 2.4.2
- In **animal cells** pyruvate/pyruvic acid is (partially) broken down into lactic ✓ acid
  - due to lactic acid fermentation ✓/plant cells can't convert ethanol and carbon dioxide back into pyruvate
  - In **plant cells** pyruvate/pyruvic acid is (partially) broken down into ethanol and carbon dioxide ✓
  - due to alcoholic fermentation ✓ / animal cells can convert lactic acid back into pyruvate (4)
- 2.4.3
- Alcoholic fermentation can be used to form alcohol ✓
  - which can be sold for income ✓

OR

- It can be used to make bread dough rise ✓
  - a greater volume of product is produced at a greater profit ✓
- (Mark first TWO only) (4)

2.4.4 Muscle cramps ✓ / spasms (1)

2.5 2.5.1

- Light ✓
- Temperature ✓
- Water ✓ / rainfall

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

2.5.2

- (The light independent phase of) photosynthesis had been taking place ✓
- This phase uses carbon dioxide to produce glucose ✓ (2)

2.5.3

- Excess carbon dioxide would be a wasted expense ✓
- Plants cannot use any more Carbon dioxide as plants would not be able to absorb beyond a set maximum ✓ / Chloroplasts could become saturated with carbon dioxide
- Excess carbon dioxide could become toxic ✓ for plant growth (Any 2 x 1) (2)

2.5.4

- (Aerobic) cellular respiration ✓ would occur
- Glucose is broken down ✓
- in the presence of oxygen ✓
- (Water and) carbon dioxide would be released ✓ (4)

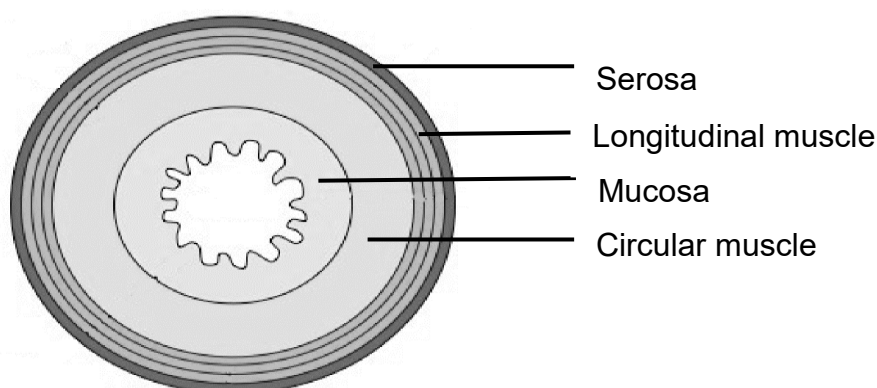
[50]



**QUESTION 3**

- 3.1 3.1.1 (a) C ✓ – Distal Convolute Tubule ✓ (2)
- (b) D ✓ – Ascending limb of Henle ✓ (2)
- 3.1.2
- Capillary has microscopic pores ✓  
only allowing smaller components of blood through ✓
  - Dense capillary network ✓/ cup shaped Bowman's capsule  
Increasing surface area for filtration to occur ✓
  - Afferent arteriole wider than efferent arteriole ✓  
Placing blood under pressure within the glomerulus increasing  
filtration
  - Podocytes lining of Bowman's capsule ✓  
form filtration slits ✓
- (Mark first THREE only)** (Any 3 x 2) (6)
- 3.1.3 (a)
- Active reabsorption ✓
  - Energy/ATP produced by cuboidal epithelial cell used ✓/pulling  
of glucose against the concentration gradient (2)
- (b)
- Passive reabsorption /osmosis ✓
  - Water is moved from a region of high concentration to a region  
of low concentration ✓ (2)
- 3.1.4
- More ADH produced ✓ means
  - They/B and C/distal convolute tubules and collecting duct become  
more permeable ✓
  - More water leaves the renal tubules ✓
  - More water reabsorbed into the blood ✓/medulla (Any 3 x 1) (3)
- 3.2 3.2.1 Urea ✓ (1)
- 3.2.2
- Proteins are too large ✓
  - To move through the pores of the glomerulus ✓ (2)
- 3.2.3
- Aldosterone ✓\* will not be secreted
  - causing the renal tubule to become impermeable to Na<sup>+</sup> ✓/sodium  
ions will not be reabsorbed ✓ from the filtrate (2)
- 3.2.4
- Diabetes mellitus ✓
  - High glucose level in the urine ✓
  - Insulin is not being produced ✓ therefore no regulation (3)

- 3.3 3.3.1 (a) Liver ✓ (1)
- (b) Rectum ✓ (1)
- (c) Gall bladder ✓ (1)
- 3.3.2
- Provides low pH / acidic conditions for enzymes to function ✓ / chemical digestion
  - Kills bacteria ✓ / pathogenic microbes
- (Mark first TWO only)** (2)
- 3.3.3
- The small intestine is long ✓  
to increase the time/surface area for absorption of products ✓
  - The walls of the small intestine are folded ✓  
to increase surface area of absorption ✓
  - The inner wall of the small intestine have villi ✓  
to increase surface area of absorption ✓
  - Each villus contains microvilli ✓  
to further increase the surface area for absorption ✓
- (Mark first TWO only)** (Any 2 x 2) (4)
- 3.3.4 Liver ✓ / A (1)
- 3.3.5
- Emulsification of fats ✓  
Assisting in the absorption of lipids ✓
  - Neutralisation of acidic chyme ✓  
to prevent damage to the small intestine ✓ / provide correct pH for enzymes to function
- (Mark first ONE only)** (Any 1 x 2) (2)
- 3.3.6 **Cross-section of the small intestine**



Caption (C)	(1)
Correct Drawing (D)	(1)
Three correct labels (L)	(3)

(5)

- 3.4 3.4.1 (a)
  - Glycerol and fatty acid tails ✓
  - C ✓ (2)
- (b)
  - Glucose ✓
  - A ✓ (2)
- 3.4.2 (a)
  - Smaller surface area ✓
  - For the reabsorption of nutrient monomers ✓
  - Due to less nutrients/glucose/amino acids/glycerol and fatty acids present in the blood ✓
  - The individual's body will not be able to sustain its nutritional needs ✓/respiration
  - Person may get tired more often ✓/ has less energy
  - Leading to health complications ✓ / disease / infections (Any 4 x 1) (4)
- [50]**

**TOTAL SECTION B: 100**  
**GRAND TOTAL: 150**