



Province of the
EASTERN CAPE
EDUCATION

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NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2024

LIFE SCIENCES P1 FINAL AMENDED MARKING GUIDELINE

MARKS: 150

This **amended** marking guideline consists of 13 pages.

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 / Palisade parenchyma
 1.2.6 Photolysis ✓
 1.2.7 Pleural ✓ membrane / pleura
 1.2.8 Oxygen ✓
 1.2.9 Islets of Langerhans ✓ (9 x 1) (9)
- 1.3 1.3.1 B ✓✓ only
 1.3.2 B ONLY ✓✓
 1.3.3 BOTH A and B ✓✓
 1.3.4 BOTH A and B ✓✓ / B ONLY (4 x 2) (8)
- 1.4 1.4.1 Trachea ✓ (1)
- 1.4.2 - Part D/ diaphragm contracts ✓
 - increasing the volume of the thoracic cavity ✓/ decreasing pressure in 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/ model cannot show contraction and relaxation of intercostal muscles
 - 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 is 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
 - Balloons are hollow/ one large sac / Lungs are not **hollow** / are made up of many small sacs
 - Lungs are not the same **size**
 - There is **no capillary network**/ transport system/ Human gaseous exchange system has transport system Any (2)
- (Mark first TWO only)

- 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 ✓
 - Presence of a double pleural membrane provides protection against friction ✓
 - Has ventilation mechanism ✓ / trachea and bronchi / breathing muscles (intercostal & diaphragm) allowing movement of air in and out ✓
- (Any 2 x 2) (4)
- 1.5.3 (a) G ✓ – Larynx ✓ (2)
- (b) A ✓ – Trachea ✓ / B ✓ - bronchus ✓ (2)

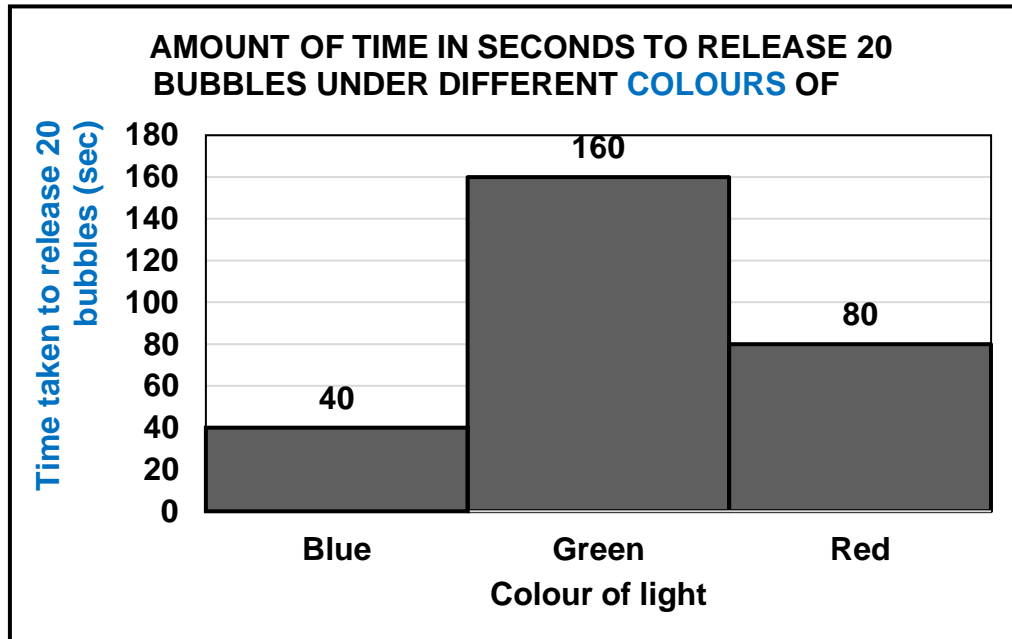
[50]

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
- Rate of oxygen bubble production indicates rate of photosynthesis ✓
 - Photosynthesis is responsible for plant growth ✓ / **accumulation of biomass**
OR
 - **Oxygen bubble production indicates photosynthesis is occurring**
 - **Photosynthesis is responsible for growth in plants** (2)
- 2.1.3 Green : Red
160 : 80 20:20
2 : 1 ✓✓ **Accept: 1: 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 **inhalation** ✓ / the ability of the lungs to fully expand
- OR**
- The thoracic cavity is no longer a closed system ✓ / **air will be pushed through the hole**
 - When the diaphragm contracts the thoracic cavity will not expand ✓ / **pressure will not decrease in the thoracic cavity**
 - And **inhalation is limited** ✓ / **less or no** air will be drawn into the lungs (3)
- 2.2.2
- **Due to difficulty in breathing** ✓ / **damaged diaphragm**
 - Carbon dioxide in the blood increased ✓ / **will not be exhaled effectively**
 - Which was detected by (chemo) receptors of the aorta ✓ / carotid artery
 - Which stimulated the Medulla Oblongata ✓
 - to send impulses to heart muscle ✓
 - to increase **contraction** the hearts **muscle** ✓ (5)
- 2.3 2.3.1 To determine if living organisms require oxygen for aerobic respiration ✓✓ (2)
- 2.3.2 (a) Oxygen ✓ uptake / **aerobic respiration** (1)
- (b) **Presence or absence of living organisms** ✓ (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 ✓

OR

- The control has all the same conditions ✓
- except for the independent variable/ living organism ✓

OR

- Syringes contain same amount of air ✓
 - to ensure both beads and insects receive the same amount of oxygen ✓
- (Any 1 x 2) (2)

(Mark first ONE only)

- 2.4 2.4.1
- Pyruvate/ pyruvic acid is broken down ✓
 - Releasing hydrogen ✓ atoms and carbon dioxide ✓
 - in the presence of oxygen ✓
 - **Small amount of energy / ATP is released** ✓
- (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 ✓
 - In **plant cells** pyruvate/pyruvic acid is (partially) broken down into ethanol and carbon dioxide ✓
 - due to alcoholic fermentation ✓
- (4)
- 2.4.3
- Alcoholic fermentation can be used to form alcohol ✓ which can be sold for income ✓
 - It can be used to make bread dough rise ✓ a greater volume of product is produced at a greater profit ✓
- (Mark first TWO only)** (2X2) (4)
- 2.4.4 Muscle cramps ✓ / spasms / **fatigue** (1)

- 2.5 2.5.1
- Light ✓ *intensity*
 - Temperature ✓
 - Water ✓/ rainfall
 - *Humidity*
 - *Windspeed*
- (Mark first TWO only)** Any (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

OR

- Excess carbon dioxide could become toxic ✓ for plant growth
 - *May lead to the death of the plant* ✓ (Any 1 x 2) (2)
- 2.5.4
- Cellular respiration ✓ would occur
 - Glucose is broken down ✓
 - in the presence of oxygen ✓
 - Carbon dioxide would be released ✓
- OR**
- *Cellular respiration* ✓ would occur
 - *Carbon dioxide would be released* ✓
 - *No photosynthesis would occur* ✓ as there is no light
 - *No carbon dioxide is being absorbed* ✓ (4)

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QUESTION 3

- 3.1 3.1.1 (a) C ✓ – Distal Convoluted Tubule ✓ / B - collecting duct (2)
- (b) D ✓ – Ascending limb of Henle ✓ / loop 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 ✓
- Glomerulus in close contact to the Bowmans cavity ✓
reducing distance to be moved by ultrafiltrate ✓
- Thin endothelium (wall) that is semi-permeable ✓
for easy absorption/movement of substances ✓
- (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 water potential to a region
of low water potential ✓ (2)
- 3.1.4 • More ADH produced ✓ means
• They/B and C/distal convoluted tubules and collecting duct become
more permeable ✓
• More water leaves the renal tubules ✓
• More water reabsorbed into the blood ✓ / medulla Any (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 • Less Aldosterone ✓* will be secreted
• causing the renal tubule to become less permeable to Na⁺ ✓
• less sodium ions will be reabsorbed ✓ from the filtrate Any (2)
- 3.2.4 • Diabetes ✓ mellitus
• High glucose level in the urine ✓
• Insulin is not being produced ✓ / is not effective, 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 has villi ✓
to increase surface area of absorption ✓
 - Each villus contains microvilli ✓
to further increase the surface area for absorption ✓
 - Good blood supply ✓
 - to maintain gradient for nutrient absorption ✓
- (Mark first TWO only)** (Any 2 x 2) (4)
- 3.3.4 Liver ✓ / A (1)
- 3.3.5
- Emulsification of fats ✓ ✓
 - Neutralisation of acidic chyme ✓ ✓
- (Mark first ONE only)** (Any 1 x 2) (2)
- 3.3.6 **Cross-section of the small intestine Remove – Microscopic structure not in CAPS. Mark out of 145 and convert to 150** (5)

- 3.4 3.4.1 (a)
 - Glycerol and fatty acid tails ✓
 - C ✓ (2)
- (b)
 - Glucose ✓ / monosaccharides
 - A ✓ (2)
- 3.4.2 (a)
 - Smaller surface area ✓
 - For the (re)absorption of nutrient monomers ✓
 - Due to less nutrients/glucose/amino acids/glycerol and fatty acids present in the blood ✓ read in "takes longer time" to less nutrients
 - The individual's body will not be able to sustain its nutritional needs ✓/respiration/ energy/ metabolism – read into it
 - 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