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Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2024

LIFE SCIENCES P1
FINAL AMENDED
MARKING GUIDELINE

MARKS: 150

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This amended marking guideline consists of 13 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.

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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	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 flattensduring 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 (**Mark first TWO only**)	Any	(2)

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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)

(Mark first TWO only)

1.5.3 (a) G ✓ – Larynx ✓ (2)

(b) A ✓ – Trachea ✓ / B ✓ - bronchus ✓ (2)

[50]

TOTAL SECTION A: 50

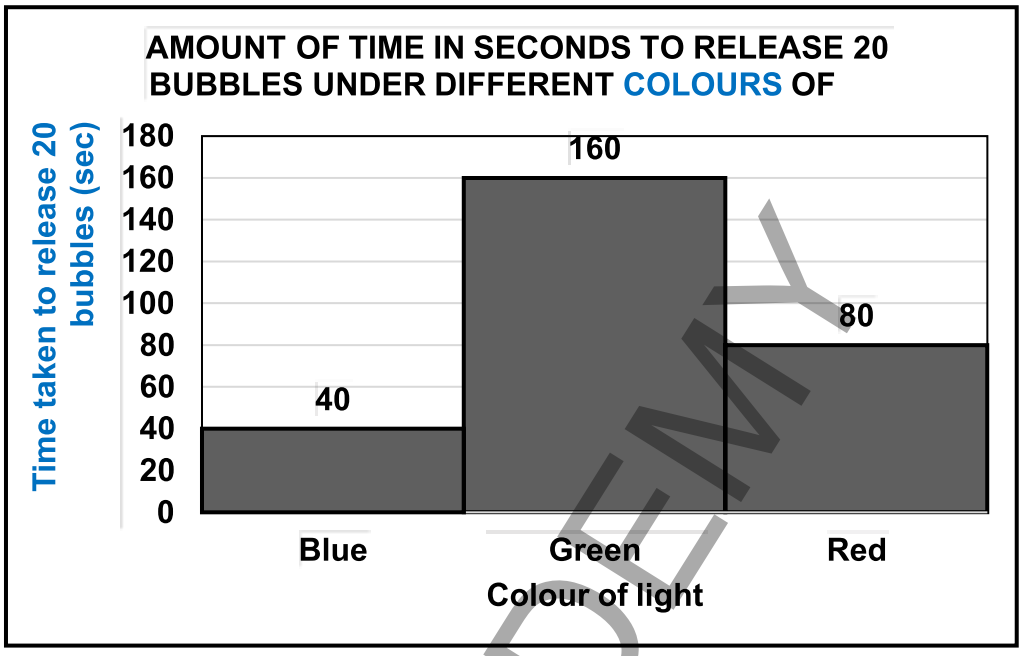
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SECTION B

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)

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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 $\frac{28-13}{13}$ ✓ x 100 ✓

= 115,38% ✓ (3)

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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)

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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)

[50]

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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)

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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)

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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 my 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

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