KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

FINAL

STANDARDISED PROVINCIAL ASSESSMENT

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GRADE 10

LIFE SCIENCES

MARKING GUIDELINE

JUNE 2026

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Marks: 150

N.B This marking guideline consist of 11 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.**

If units are not given in measurements

15. Candidates will lose marks. Memorandum will allocate marks for units separately.

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

Caption

17. All illustrations (diagrams, graphs, tables, etc.) must have a caption.

Code-switching of official languages (terms and concepts)

18. 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 C✓✓
1.1.2 D✓✓
1.1.3 D✓✓
1.1.4 C✓✓
1.1.5 B✓✓
1.1.6 C✓✓
1.1.7 D✓✓
1.1.8 NO ANSWER
1.1.9 A✓✓
1.1.10 D✓✓

(2 x 9) **(18)**

1.2 1.2.1 Pericardium✓
1.2.2 Centrosome✓
1.2.3 Clip✓/ clamp
1.2.4 Cancer✓
1.2.5 Cranium✓
1.2.6 Capillaries✓
1.2.7 Double circulation✓

(1 x 7) **(7)**

1.3 1.3.1 Both A and B✓✓
1.3.2 B only✓✓

(2 x 2) **(4)**

1.4 1.4.1 (a) (Left) lung✓ (1)

(b) Heart ✓ (1)

1.4.2 (a) A✓ Pulmonary artery✓ (2)

(b) NO ANSWER

1.4.3 Septum✓ (1)

1.4.4 Right ✓ (1)

1.4.5 Aorta✓ (1)
(7)

1.5 1.5.1 Cereal C✓ (1)

1.5.2 (a) - Glycerol✓
- Fatty acids✓ (2)

(b) Sodium✓ (1)

(c) - Carbon ✓
- Hydrogen✓
- Oxygen✓
(Mark first TWO only) Any (2)

1.5.3 (a) Cereal B✓ (1)

(b) Millons reagent✓/ Biuret test (1)

(c) Blue-black✓/ purple/Violet (1)

(d) Scurvy ✓/ bleeding gums (1)
(10)

TOTAL SECTION A: 46

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SECTION B

QUESTION 2

2.1 2.1.1 (a) Root hair✓ (1)

(b) Parenchyma✓ cells (1)

2.1.2
- Round✓/ oval in shape
- Have thin cell walls✓
- Have intercellular air spaces✓
- Have large vacuoles✓ Any (2)

(Mark first TWO only)

2.1.3
- Have large surface area✓ for water to enter✓
- They are thin✓ fit between the soil particles and come into contact with the soil water✓
- They have large vacuole with low water potential✓ so water can move from the soil and enter them✓ (Any 2 x 2) (4)

(Mark first TWO only) **(8)**

2.2 2.2.1 (a) Palisade mesophyll✓ cells (1)

(b) Spongy mesophyll✓cells (1)

2.2.2 A✓ Epidermis✓ (2)

2.2.3 (a)
- Allows fast diffusion of carbon dioxide and oxygen✓
- to and from the parenchyma cells✓
- for photosynthesis✓
- and cellular respiration✓ Any (3)

(b)
- There would be less light absorption✓
- and number of chloroplast will also be reduced✓
- Causing low photosynthesis ✓
- Leading to less glucose produced✓
- Thus slowing the plant growth and energy supply ✓ Any (4)

(c)
- Increased gas exchange✓ / more carbon dioxide will enter
- And more oxygen will leave the leaf✓
- Increasing the rate of photosynthesis✓ (3)

(14)

2.3 2.3.1 In a ring✓/xylem and phloem are arranged along the same radius (1)

2.3.2

Tissue X/ Phloem	Tissue Y/Xyem
- Conduct dissolved food✓	- Conduct waters and dissolved mineral salts✓
- Walls are thin✓ /made up of cellulose	- Walls are thickened✓ /lignified
- Sieve plates present✓	- Cross walls perforated✓ / absent
- Transport is from leaves to roots✓	- Transport is from root to leaves✓

Table + Any (2 x 2) (5)
(6)

2.4 2.4.1 Surface of the leaf✓ (1)

2.4.2 To determine which surface of the leaves loses most water✓✓ (2)

2.4.3 (a) - Type of leave✓
- Decide on recoding tool✓
- Decide on the duration of the investigation✓ Any (2)
(Mark the first TWO only)

(b) NO ANSWER

2.4.4 $\left[\frac{2.2 - 1.4}{2.2}\right]$ ✓ x 100✓

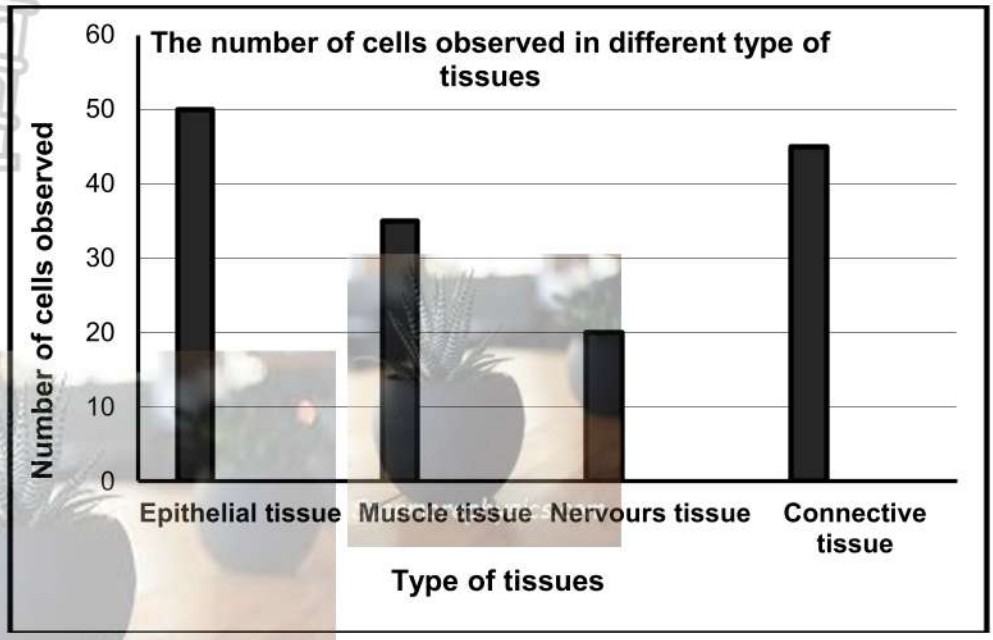
= 36%✓ (3)

2.4.5 NO ANSWER

2.4.6 More water is lost from the lower surface of the leaf✓✓ (Vaseline is applied to the upper surface) (2)
(10)

2.5 2.5.1 Cuboidal epithelial✓ tissue (1)

2.5.2



MARKING CRITERIA FOR THE GRAPH:

Criteria	Elaboration	Mark
Correct type of graph **(T)**	Bar graph drawn	1
Caption of graph **(C)**	Both variables included	1
Axis Labels **(L)**	X- and Y-axis correctly labelled with units	1
Scale for X and Y-axis (**S**)	- Equal space and width of bars for X-axis and - Correct scale for Y-axis	1
Plotting of co-ordinates (**P**)	- 1 to 3 co-ordinates plotted correctly - ALL 4 co-ordinates plotted correctly	1 2

(6)
(7)
[45]

QUESTION 3

3.1 3.1.1 (a) 25 years✓ (accept range 24 - 26) (1)

(b) 45 years✓ (accept range 44 – 46) (1)

3.1.2 - Diet rich in calcium and vitamin D✓
- Regular weight-bearing exercise✓
- Avoid smoking and excessive alcohol consumption✓ (2)
(Mark first TWO only)

3.1.3 (a) - Bone tissue is constantly broken down and rebuild✓
- In osteoporosis, bone breakdown occurs faster than formation✓
- This results in decreased bone density, making bones weak and fragile✓ (3)

(b) After menopause:

- Levels of hormone oestrogen decrease✓
- Oestrogen helps maintain bone density, so its decrease leads to increased bone loss✓ (2)
(9)

3.2 3.2.1 M ✓ Enzyme✓ (2)

3.2.2 - Each enzyme has a specific shape✓
- The substrate✓
- on which the enzyme works fit into the enzyme✓
- An enzyme-substrate complex is formed✓
- A chemical reaction occurs and the substrate is changed✓
- The enzyme and the product are then separated✓
- The enzyme is free and ready to react with a substrate again✓ (6)
(8)

3.3 3.3.1 Cell membrane✓ (1)

3.3.2 (a) B✓ (1)

(b) - No chloroplast✓
- No large vacuole✓
- No cell wall✓
- Irregular shape✓ Any (2)

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(Mark first TWO only)

3.3.3
- Control all the activities of the cell✓
- Transmits hereditary characteristics from parents to offspring✓
- Controls the production of enzymes✓ Any (2)

(**Mark first TWO only)**

3.3.4
- There will be a decrease in cell size✓ leading to
- Leading to fewer organelles being supported✓
- Reduced metabolic reactions✓
- Poor transport of substances✓
- All these can lead to cell malfunction or death✓ Any (4)

3.3.5
- Less energy will be produced✓
- Causing muscle cells fatigue more quickly✓
- Leading to muscle weakness/cramps and reduced endurance✓ (3)

(13)

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3.4 3.4.1
- Movement of water molecule from high water potential area to low water potential✓
  across (differentially permeable) membrane✓ (2)

3.4.2
- Both shells were removed/surrounded by membrane only✓
- Both eggs were raw✓
- Same type of beakers✓ Any (2)

(**Mark first TWO only)**

3.4.3
- Increase sample size/ number of eggs✓
- Repeat investigation several times✓ Any (1)

(**Mark first ONE only)**

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3.4.4 (a) Swollen✓/ increased in size (1)

(b) Shrunken✓/ decreased in size (1)

3.4.5
- The water potential in the tap is higher✓
- than in the egg✓
- Water will move from the high-water potential in tap water to low water potential in an egg✓
- that results in the egg swelling / increasing in size✓
- because water is entering the egg through the egg membrane✓ (5)

(12)

3.5 3.5.1 Prophase✓ (1)

3.5.2 DNA replication✓ (1)

3.5.3 Four✓/4 (1)

3.5.4 2, 1, 3✓✓ (2)

3.5.5
- Metaphase✓*
- Chromosome are arranged along the equator✓
- Spindle fibres attaché to chromosomes✓
- through centromere✓ Any (3)
(8)
[50]

TOTAL SECTION B 95
GRAND TOTAL 141

Conversion Table:

0 – 7	No mark
8 – 23	+ 1
24 – 39	+ 2
40 – 54	+ 3
55 – 74	+ 4
75 – 85	+ 5
86 – 100	+ 6
101 - 116	+ 7
117 – 132	+ 8
133 - 141	+ 9

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