education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

LIFE SCIENCES P1
MARKING GUIDELINES

NOVEMBER 2024

MARKS: 150

These marking guidelines 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 part of it is required**
   Read all and credit relevant part.

4. **If comparisons are asked for and descriptions are given**
   Accept if 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 unrecognized abbreviation but credit the rest of 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 recognizable, 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 letter is asked for and only 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 caption.

18. **Code- switching of official languages (terms and concepts)**
    A single word or two that appears in any official language other than the learners assessment language used to the greatest extent in his/ her answer 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.

19. **Changes to the memorandum**
    No changes must be made to the memoranda. The provincial internal moderator must be consulted, who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).

SECTION A

QUESTION 1

1.1.1 A✓✓

1.1.2 C✓✓

1.1.3 C✓✓

1.1.4 B✓✓

1.1.5 D✓✓

1.1.6 A✓✓

1.1.7 C✓✓

1.1.8 B✓✓

1.1.9 B✓✓

1.1.10 D✓✓

(10 x 2) **(20)**

1.2.1 Endothelium✓ (1)

1.2.2 Meristematic✓/ cambium (1)

1.2.3 Iron✓ (1)

1.2.4 Centromere✓ (1)

1.2.5 Phloem✓ (1)

(5 x 1) **(5)**

1.3.1 A only✓✓

1.3.2 B only✓✓

1.3.3 Both A and B✓✓

(3 x 2) **(6)**

1.4.1 (Light) Microscope✓ (1)

1.4.2 (a) Eyepiece✓lens (1)

(b) Coarse adjustment knob✓ (1)

(c) Stage✓ (1)

1.4.3 Objective lens magnify objects enough to be seen in great detail✓ (1)

1.4.4 The process of enlarging the apparent size of an object and not its physical size✓ (1)

1.4.5 50 mm x 0,9 µm ÷ 8✓
=5,6✓
=0,0056✓ (3)
(9)

1.5.1 (a) D✓ (1)

(b) B✓ (1)

(c) A✓ (1)

1.5.2 (a) G✓ (1)

(b) F✓ (1)

(e) E✓ (1)

1.5.3 It contains chloroplast✓ (1)

1.5.4 -The cell membrane will pull away from the cell wall✓/ the cell will plasmolyse
-since water will leave the cell✓by osmosis/exosmosis
-and move into the concentrated sugar solution✓/ because of concentration gradient. (3)
(10)

TOTAL SECTION A: [50]

SECTION B

QUESTION 2

2.1.1 Organic compound is a compound which has carbon✓with hydrogen and oxygen✓
or
An organic compound is a compound which contain carbon ✓and bond to other elements like hydrogen, oxygen and nitrogen✓ (2)

2.1.2 A Carbohydrates✓ (1)

B Lipid✓/Fats (1)

C Protein✓ (1)

2.1.3 (a) Monosaccharides✓/Saccharides (1)

(b) Fatty acid and glycerol✓ (1)

2.1.4 A✓ (1)
(8)

2.2.1 Prophase✓ (1)

2.2.2 (a) A✓ (1)

(b) E✓ (1)

2.2.3 (a) Chromatid✓ (1)

(b) Cytoplasm✓/ Cytosol (1)

2.2.4 -DNA replication occur✓ (2)
-To double the genetic material✓
-So that each cell after mitosis has identical genetic material✓
(Any two)

2.2.5 4✓ (1)
(8)

2.3.1 Chemotherapy✓/ Radiotherapy (1)

2.3.2 *Sutherlandia*✓ (1)

2.3.3 There will be no DNA replication✓and hence no mitosis✓ (2)

2.3.4 -Repeat the investigation more than once✓ (2)
-Increase the number of the monkeys✓/use more than 10 monkeys
-Increase the sample size/use more than 500 males and 500 females
(Any two) **(6)**

2.4.1 Sensory neuron✓/ Unipolar (1)

2.4.2 (a) Cell body✓ (1)

(b) Dendrites✓/ Motor end plate (1)

2.4.3 Sensory neuron: conduct nerve impulses from the receptors/ sense organs to the central nervous system✓
Motor neuron: conduct nerve impulses from the central nervous system to the effectors✓/ muscles and glands (2)
(5)

2.5.1 - Decide on what time✓to do the investigation (2)
- Decide on place✓where to do the investigation
- decide on the recording tool✓to use
- decide on the type of shirts✓ to use
Mark the first two only **(Any two)**

2.5.2 - Shirt type✓ (2)
- Type of detergent✓
- Time✓
Mark first two only **(Any two)**

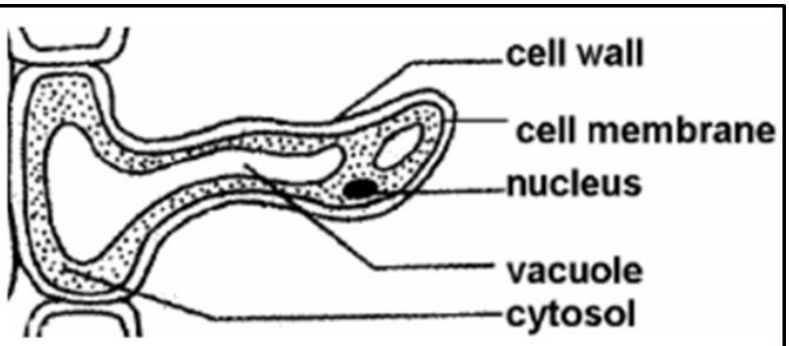
2.5.3 Serve as a control✓to compare the results✓ (2)

2.5.4 The high temperature of the boiling✓ affects the fat- digesting enzyme activity. ✓ (2)
(8)

2.6.1 **B-** Parenchyma✓
C- Collenchyma✓ (2)

2.6.2 -The epidermal cells are transparent✓
- to allow sunlight to enter the leaf for photosynthesis✓
-The epidermal cells are closely packed✓
- to protect underlying cells✓
-The epidermal cells in the leaves are covered by **a** cuticle✓
- to reduce water loss✓
-The presence of guard cells with stomata✓
- allows for gaseous exchange✓
-The guard cells contain chloroplasts✓
- to allow for photosynthesis✓
Mark the first two only **(2x2)** (4)

2.6.3



Structure of the root hair

(3)

RUBRIC TO ASSESS DRAWING

CRITERIA	MARK
Caption **(C)**	1
Correct Drawing **(D)**	1
Correct Labels (any one) **(L)**	1

2.6.4 -It is a long tube-like outgrowth from the epidermis✓, to increase the surface area for absorption of water and nutrients✓ (4)
-It contains mitochondria✓ which releases energy for active transport✓
-Large vacuole✓ with lower water potential in cell sap than ground water✓
-Thin cell wall without cuticle✓ to maximise water movement into root✓
(Any two) **(2x2)**

2.6.5 Water molecules will have a high amount of kinetic energy✓, allowing them to move into the root hair more readily✓ (2)

(15)

TOTAL QUESTION 2: **[50]**

QUESTION 3

3.1.1 Axial skeleton✓ (1)

3.1.2 Foramen magnum✓ (1)

3.1.3 Atlas✓/ first cervical vertebra (1)

3.1.4 2:1:2:3
2:1:2:3 ✓ (1)

3.1.5 16✓ (1)

3.1.6 The number, type✓and arrangement✓of teeth of a specific animal (2)
(7)

3.2.1 A- Pivot joint✓
B- Hinge✓
C- Gliding joint✓ (3)

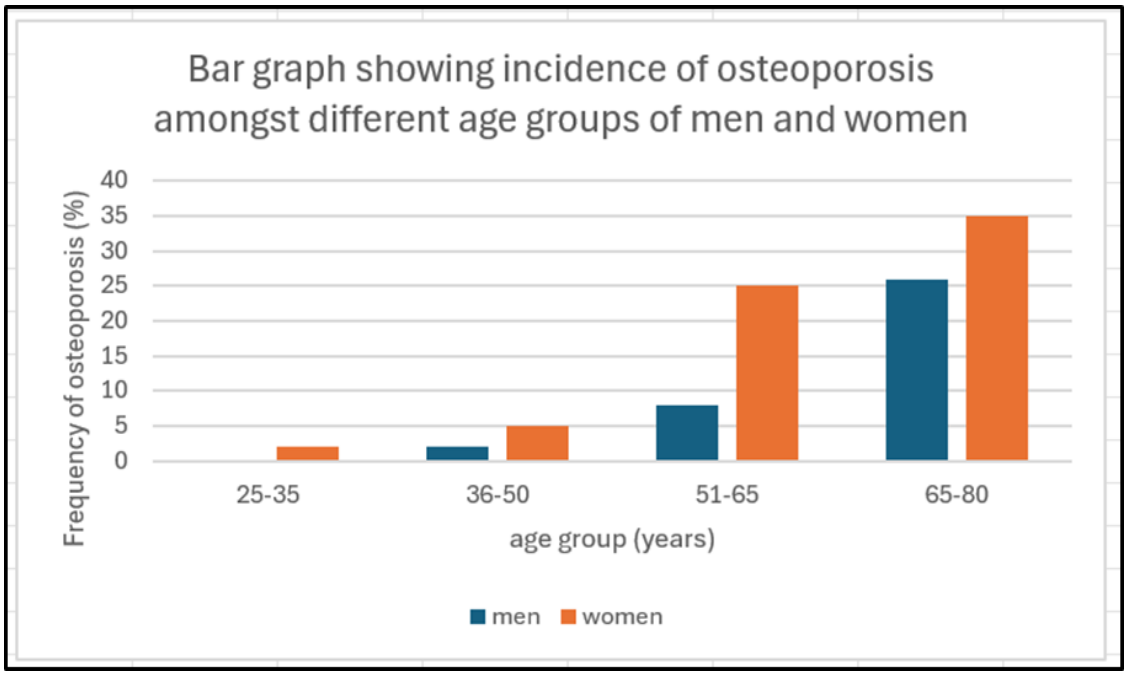
3.2.2 - Support
- Movement
- Hearing
- Storage of minerals **(Any three)** (3)
(6)

3.3.1 (a) Frequency of Osteoporosis✓ (1)

(b) 20- 35✓years (1)

3.3.2 Women✓ (1)

3.3.3



RUBRIC TO ASSESS GRAPH

CRITERIA	MARK
Caption- **(C)**	1
Correct graph- **(T)**	1
Correct label on Y- and X-axes- **(L)**	1
Correct scale on Y- and X-axes- **(S)**	1
Plotting- **(P)**	1: 2 sets plotted correctly 2: ALL sets plotted correctly

(6)
(9)

3.4.1 (a) 1✓ and 4✓ (2)

(b) 2✓ and 3✓ (2)

3.4.2 Temperature✓/ Light intensity (1)

3.4.3 - The leaves are smaller✓to reduce/decrease the surface area for evaporation✓ (4)
- The leaves have thorns✓which have fewer stomata✓
- The stomata occur in the lower epidermis of the leaf✓not exposed to direct sunlight✓
- Sunken stomata✓reduces the diffusion gradient between the outside of the leaf and air within the leaf✓
- Hairs on the leaf✓traps the water vapour✓
-Thick cuticle✓lowers the transpiration✓ **(Any two)** **(2x2)**

3.4.4

Dicotyledonous root	Dicotyledonous stem
Xylem and phloem occur in a central stele.	Xylem and phloem occur in vascular bundles.
Xylem alternates with phloem/ xylem is arranged in a cross with phloem between the arms of the cross.	Xylem and phloem are arranged along the same radius/ vascular bundles are arranged in a circle.
Clearly defined endodermis is present.	Endodermis is absent or not clearly visible.
Root hairs present.	Root hairs absent.
Pith absent.	Pith present.

Table 1 + any 2x2 (5)
(14)

3.5.1 The cuticle✓is a waxy layer✓that is waterproof✓/ keeps water in and out (3)

3.5.2 Xylem✓ (1)

3.5.3 - Cross walls are perforated✓to form continuous tubes for movement of water.✓ (4)
- Xylem vessels have no cell content✓/dead/hollow, to allow the water to flow freely✓
- Walls are strengthened with lignin✓to prevent the walls of collapsing✓/ withstand sucking force of transpiration/ to allow water to move freely
- Walls have pits✓to allow lateral movement of water✓
- They are long and cylindrical✓to allow continuous movement of water✓
Mark the first two only **(2x2)**

3.5.4 Photosynthesis✓ (1)

3.5.5 Osmosis✓/Root pressure/ Transpiration pull/ Transpiration (1)
(10)

3.6 - Cut the stem of the plant underwater✓,to prevent air from entering the xylem✓ (4)
- Apply petroleum jelly✓/Vaseline, to make the potometer airtight✓
- Cut the stem at an angle✓, to expose more of the xylem for water absorption ✓
(Any two) **(2x2)**
(4)

TOTAL QUESTION 3: [50]

TOTAL SECTION B: 100
GRAND TOTAL: 150