



# education

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Department:  
Education  
North West Provincial Government  
**REPUBLIC OF SOUTH AFRICA**

## PROVINCIAL ASSESSMENT

**GRADE 10**

**LIFE SCIENCES  
MARKING GUIDELINES**

**JUNE 2024**

**MARKS: 150**

**These marking guidelines consist of 10 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 becomes 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).

## Grade 10 - Marking Guidelines

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

1.1.1 B✓✓

1.1.2 D✓✓

1.1.3 C✓✓

1.1.4 B✓✓

1.1.5 C✓✓

1.1.6 C✓✓

1.1.7 C✓✓

1.1.8 A✓✓

1.1.9 B✓✓

1.1.10 C✓✓

(10 x 2)

**(20)**

1.2.1 Vitamin A✓

(1)

1.2.2 Lysosomes✓

(1)

1.2.3 Haemoglobin✓

(1)

1.2.4 Peptide bond✓

(1)

1.2.5 Connective tissue✓

(1)

(5 x 1)

**(5)**

1.3.1 A only✓✓

1.3.2 B only✓✓

1.3.3 A only✓✓

(3 x 2)

**(6)**

1.4.1 (a) B✓

(1)

(b) It has catalyzed the reaction without itself being changed during the reaction.✓

(1)

(c) Enzyme-substrate complex✓

(1)

(d) Denatures✓  
loses a specific shape and function✓  
due to the hydrogen bonds being broken✓

(3)

(e) - Enzymes are proteins that control the speed of chemical

## Grade 10 - Marking Guidelines

- reactions in the body.✓
- Used in making of fruit juices to break down cellulose✓ (1)
- used in making lactose free milk✓
- used in production of baby food✓

**mark first one only**

(f)

**Lock and key theory**✓\*

- Each enzyme has a specific/particular shape✓
- The substrate on which the enzyme works fit into enzyme✓
- An enzyme-substrate complex is formed✓
- A chemical reaction occurs and substrate is changed✓
- The enzyme and the product are then separated✓
- The enzyme is free to react with more of the substrate✓

**(\*Compulsory mark, then any four)**

(5)

**(12)**

- 1.5.1 They contain enzymes✓ (1)
- 1.5.2 Approximately 37°C ✓ (1)
- 1.5.3 High temperature cause the enzymes to denature✓/change shape and cannot function✓effectively. (2)
- 1.5.4 Less washing powder✓/ less electricity is needed✓ (1)
- 1.5.5 It is the temperature at which enzymes function the best✓✓ (2)

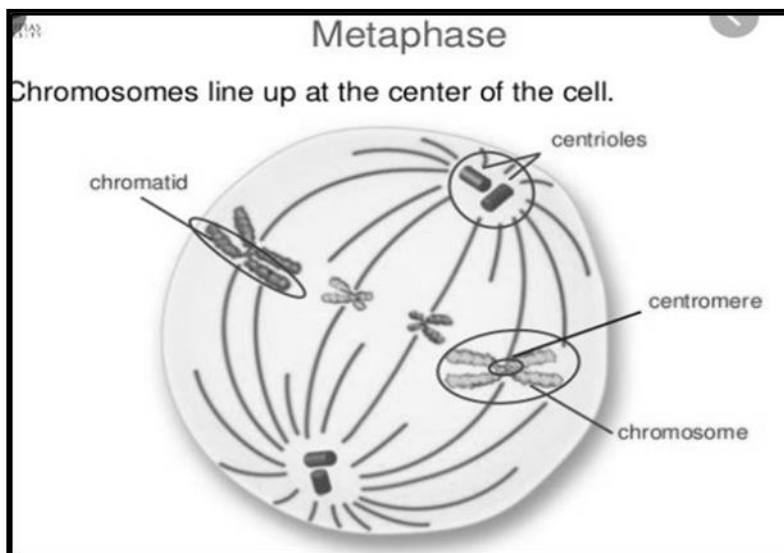
**(7)**

**TOTAL SECTION A: [50]**

**SECTION B****QUESTION 2**

- 2.1.1 1 Centriole✓ (1)
- 2 2 Spindle fibre✓ (1)
- 3 3 Chromatid✓ (1)
- 2.1.2 Four / 4✓ (1)
- 2.1.3 Four/ 4✓ (1)
- 2.1.4
- Growth/ increase in size of an organism✓
  - Replacement of dead cells✓
  - Responsible for asexual reproduction in certain plants and animals✓
  - Repairs damaged tissue✓ **(Any two)** (2)

2.1.5



**1 mark** for the correct representation of metaphase stage  
**3 marks** for any correct labels

(4)

**(11)**

2.2.2 Is the type of cancer that affects the colon and rectum✓

(1)

2.2.2 Refers to cells that are undifferentiated✓ and are dividing in an uncontrolled manner✓

(2)

2.2.3 Surgery✓ and chemotherapy✓

(2)

**(5)**

2.3.1 (a) Interphase✓

(1)

(b) Metaphase✓

(1)

2.3.2  $58 - 47 \div 47 \times 100 = 23,4$ ✓

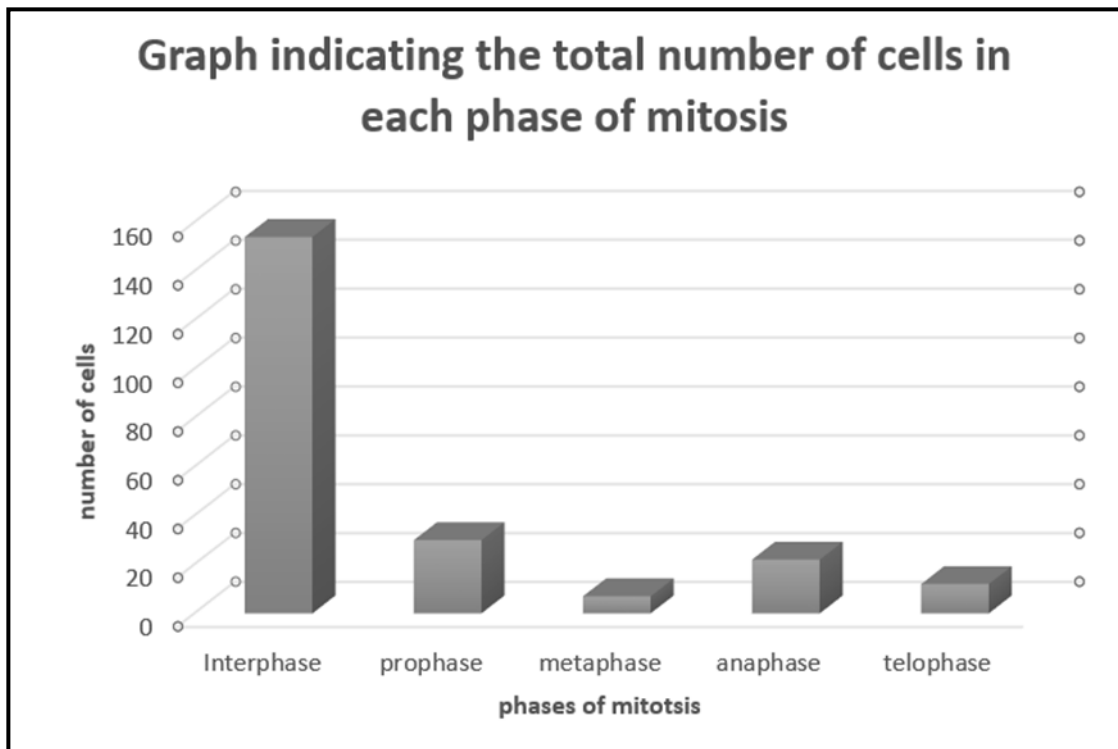
(3)

- 2.3.3
- The nuclear membrane disappears✓
  - Chromosomes are visible✓
  - Centrosome split into two centrioles✓
  - Centrioles move to opposite poles of the cell✓
  - Spindle fibers develops at the centrioles✓

(4)

**(Any four)**

2.3.4



**Rubric for assessing the graph**

CRITERIA	MARK
Correct type of graph, bar graph (not histogram) (T)	1
Caption including both variables (C)	1
Labels for X and Y- axes including units (L)	1
Appropriate scale for X (width of bars and intervals) and Y- axes (S)	1
Plotting of points on the graph (P)	1: correctly plotted one to four points 2: correctly plotted all six points

(6)

- NB: - if the wrong type of graph is drawn, marks will be lost for the correct type and plotting.  
 - If axes are transposed, marks will be lost for labelling and scale.

(15)

## Grade 10 - Marking Guidelines

- 2.4.1 Animal cell✓ (1)
- 2.4.2 - Presence of cell membrane only✓  
- Presence of centriole✓  
- Invagination✓/ cleavage furrow appears  
- No cell wall formed✓/ No cell plate formed (2)
- (Any two)**
- 2.4.3 (a) B✓ (1)
- (b) C✓ (1)
- (5)**
- 2.5.1 Tonoplast✓ (1)
- 2.5.2 - Gives turgidity✓/rigidity/turgor pressure to the cell  
- Maintains shape✓/ swollen appearance to the cell  
- Storage of cell sap with water and salts✓  
- Storage of pigment that give colour to petals of flowers✓  
- Plays a part in water balance in cells✓/ osmosis (2)
- (Mark the first two)**
- (3)**

2.6	Plant cell	Animal cell
	Regular shape✓	Irregular shape✓
	Both cell wall and cell membrane✓	Only cell membrane no cell wall✓
	Large vacuole✓	Small or absent vacuole✓
	No centrioles/ centrosome present✓	Centrioles present/ centrosome✓
	No lysosome present✓	Lysosome present✓

**Table 1 mark & any 3 x 2 (7)**

- 2.7.1 (a) Zhandalee✓ (1)
- (b) Vastheek✓ (1)
- 2.7.2 It contains haemoglobin✓ which transport oxygen to body cells✓ (2)
- (4)**

**TOTAL QUESTION 2: [50]**

**QUESTION 3**

- 3.1.1 Transpiration is the loss of water in the form of water vapour✓ from the aerial parts of a plant.✓ (2)
- 3.1.2 As temperature increases✓, transpiration rate increases✓ when it reaches an optimal temperature✓, transpiration rate stays the same✓, the graph levels off. (2)
- (Any two)**
- 3.1.3 - Humidity is very high✓ / lots of water vapour in the air



## Grade 10 - Marking Guidelines

- Water potential gradient between inside of the leaf stomata and atmosphere is very low. ✓ (2)
- Transpiration rate decreases ✓ / greatly decreased to the minimal level. (Any two)
- 3.1.4 Stomata tend to close at night ✓, reducing the transpiration rate ✓ (2)  
**(8)**
- 3.2.1 (a) Sunlight ✓ / Light (1)
- (b) Amount of seed that germinated ✓ (1)
- 3.2.2 - Amount of soil ✓  
- Size of pots ✓  
- Type of seeds (lettuce) ✓ / Number of seeds  
- Amount of water ✓ (2)  
**(Any two)**
- 3.2.3 - Repeat the experiment more than once ✓  
- Use more seeds ✓ / increase sample size (1)  
**(Any one)**  
**(5)**
- 3.3.1 1 Epidermal cells ✓ (1)
- 4 Xylem ✓ (1)
- 5 Pericycle ✓ (1)
- 3.3.2 - Water enter root hairs by osmosis ✓  
- Osmosis is the movement of water molecules from the region of high water potential to the region of low water potential. ✓  
- in the soil there is a region of high water potential ✓  
- root hairs a region of lower water potential ✓  
- water moves through the semi-permeable membranes ✓ of the cells  
- then moves across the cortex ✓ of the root  
- via the endodermis ✓ into the xylem tissue ✓ (6)  
**(Any six)**
- 3.3.3 The soil must have high water potential ✓ and the root low water potential ✓ (2)
- 3.3.4 Root pressure ✓ (1)
- Guttation ✓ (1)
- Capillarity ✓ (1)  
**(14)**
- 3.4.1 (a) Bone tissue ✓ (1)
- (b) Nerve tissue ✓ (1)
- 3.4.2 1 Dendrites ✓ (1)
- 2 Axon ✓ (1)

## Grade 10 - Marking Guidelines

3.4.3	Goblet cells✓	(1)
3.4.4	(a) F✓	(1)
	(b) D✓	(1)
3.4.5	They are attached to the bones to enable movement of the skeleton✓	(1)
		<b>(8)</b>
3.5.1	Potometer ✓	(1)
3.5.2	To prevent air from entering✓and blocking the xylem vessel✓	(2)
3.5.3	To measure the rate of absorption ✓which indicates the rate of transpiration✓	(2)
3.5.4	To move the air bubble back✓	(1)
3.5.5	Apparatus must be airtight✓ Only one factor must be changed in relation to the normal condition✓ Cut the leafy twig under water✓ Use a leafy twig from a growing plant✓ Leave entire apparatus for 30 minutes, for the plant to become adjusted to the factor been investigated✓	(2)
	<b>(Mark first two)</b>	<b>(8)</b>
3.6.1	(a) P- Starch✓	(1)
	(b) Q- Glucose✓	(1)
	(c) R- Lipid test✓	(1)
3.6.2	(a) Bright orange✓	(1)
	(b) Blueish black✓/ Purplish black/ Black	(1)
3.6.3	(a) Milion's reagent	(1)
	(b) Brick red✓ colour	(1)
		<b>(7)</b>

**TOTAL QUESTION : [50]**

**TOTAL SECTION B: 100**

**GRAND TOTAL: 150**