



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

NOVEMBER 2020

**LIFE SCIENCES
MARKING GUIDELINE
(EXEMPLAR)**

MARKS: 150

This marking guideline consists of 9 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information is given than marks allocated**
Stop marking when maximum marks are reached and put a wavy line and write '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 provincial 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.
19. **Changes to the marking guideline**
No changes may be made to the marking guideline without consulting the provincial internal moderator.

SECTION A**QUESTION 1**

- | | | | | |
|-----|--------|---|----------|------|
| 1.1 | 1.1.1 | C ✓✓ | | |
| | 1.1.2 | B ✓✓ | | |
| | 1.1.3 | A ✓✓ | | |
| | 1.1.4 | C ✓✓ | | |
| | 1.1.5 | D ✓✓ | | |
| | 1.1.6 | D ✓✓ | | |
| | 1.1.7 | D ✓✓ | | |
| | 1.1.8 | A ✓✓ | | |
| | 1.1.9 | B ✓✓ | | |
| | 1.1.10 | C ✓✓ | (10 x 2) | (20) |
| 1.2 | 1.2.1 | Polysaccharides ✓ | | |
| | 1.2.2 | Iron ✓/ Fe | | |
| | 1.2.3 | Cuticle ✓ | | |
| | 1.2.4 | Foramen magnum ✓ | | |
| | 1.2.5 | Group O ✓ | | |
| | 1.2.6 | Chemotherapy ✓ | | |
| | 1.2.7 | Oils ✓ | | |
| | 1.2.8 | Cambium ✓ | | |
| | 1.2.9 | Tissue ✓ | | |
| | 1.2.10 | Transpiration ✓ | (10 x 1) | (10) |
| 1.3 | 1.3.1 | Both A and B ✓✓ | | |
| | 1.3.2 | A only ✓✓ | | |
| | 1.3.3 | B only ✓✓ | (3 x 2) | (6) |
| 1.4 | 1.4.1 | A – joint capsule ✓ | | (1) |
| | | B – cartilage ✓ | | (1) |
| | 1.4.2 | Hinge joint ✓ | | (1) |
| | 1.4.3 | Fluid lubricates the bones and cartilage to prevent friction, ✓ drying out of the fluid results in painful, difficult mobility ✓/inflammation | | (2) |
| | 1.4.4 | Osteoarthritis, ✓ Rheumatoid arthritis ✓ | | (2) |
| 1.5 | 1.5.1 | Iodine ✓ | | (1) |
| | 1.5.2 | Millon's ✓/ copper sulphate | | (1) |
| | 1.5.3 | Brick red ✓/ violet | | (1) |
| | 1.5.4 | Fats ✓/ lipids | | (1) |
| | 1.5.5 | Translucent stain on a blotting ✓/ brown/ filter paper | | (1) |
| | 1.5.6 | Glucose ✓/ simple sugar/ monosaccharide | | (1) |
| | 1.5.7 | Benedict's solution ✓/ Fehling's A and B | | (1) |

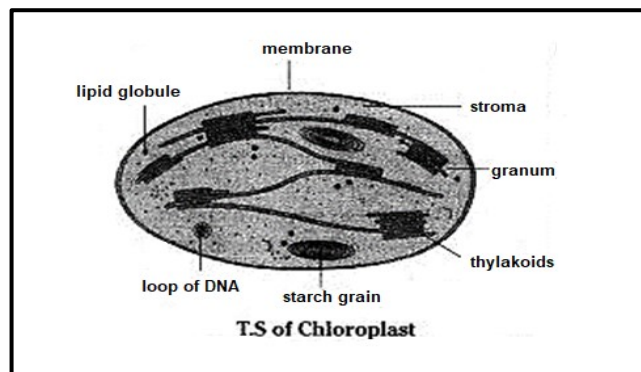
TOTAL SECTION A: 50

SECTION B

QUESTION 2

- 2.1 2.1.1 (a) An enzyme is a biological catalyst ✓ that speeds up/accelerates a chemical reaction ✓ (2)
- (b) A poisonous substance is converted into harmless substance, ✓ which prevents poisoning of body tissues ✓ (2)
- (c) Water ✓ and oxygen ✓ (2)
- (d) Enzyme remains unchanged ✓ and can be used repeatedly ✓ (2)
- 2.1.2 (a) Enzyme catalase functions optimally ✓ at body temperature of 37 °C ✓/ catalase become denatured by extremely high temperatures ✓ (90 °C) and its action will be negatively affected ✓ /catalase will be inactive ✓ at extremely low temperatures ✓ (2 °C) (2)
- (b) In test C ✓37 °C is the human body temperatures/optimum temperature where enzymes work best ✓ (2)
- (c) The formation of bubbles ✓ (1)
- (d) - No bubbles formed in **test tube A**, ✓ H₂O₂ was not broken down, catalase inactive at low temperatures of 2 °C. ✓
- No bubbles formed in **test tube B**, ✓ H₂O₂ was not broken down, catalase inactive at high temperatures of 90 °C ✓ (4)
- (e) Enzymes are sensitive to temperature ✓ (1)
- (f) - Same amount/size of chicken livers ✓
- Same amount/concentration of enzyme used ✓
- Chicken livers exposed to the same pH (Any TWO) (2)
- (g) To ensure reliability ✓ (1)
- 2.2 2.2.1 Organelle 1 – mitochondrion ✓ (1)
Organelle 2 – chloroplast ✓ (1)
- 2.2.2 Organelle 2/chloroplast ✓ (1)

2.2.3

ChloroplastMarking rubric

Caption (C) ✓

Correct diagram ✓

Any 3 correct labels ✓✓✓

(5)

2.2.4 Grana lamella ✓

(1)

2.2.5 Muscle cell, ✓ carries out process of aerobic respiration by breaking down food in the presence of oxygen resulting in cells storing energy in the form of ATP. ✓

(2)

2.2.6 Muscle cell ✓ Very active tissue ✓

(2)

2.2.7	Chloroplast/Organelle 2	Mitochondrion/Organelle 1
1.	Disc shaped ✓	1. Rod shaped ✓
2.	About 4 to 10 nm in length ✓	2. About 1,5 nm long ✓
3.	Site for photosynthesis ✓	3. Site for cellular respiration ✓
4.	Fluid called stroma ✓	4. Fluid called matrix ✓
5.	Inner projections called cristae ✓	5. Stacked lamella called grana ✓

Rubric

Table drawn ✓

(Any 3 x 2 + 1)

(7)

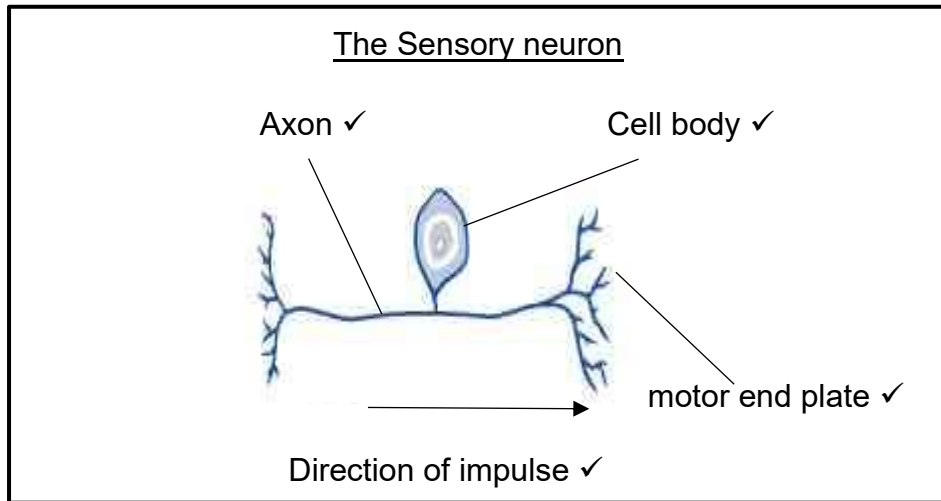
2.2.8 Actual size = Measured size (ruler)/ Magnification ✓
 = 86 mm / 4 000 ✓
 = 0,0215 ✓micrometres

(3)

2.3 2.3.1 Sensory ✓ / Unipolar neuron

(1)

2.3.2



Rubric

Direction of an impulse ✓
Any two correct labels ✓✓

(3)

2.3.3 (a) cell body ✓
(b) motor end plate ✓

(2)

[50]

QUESTION 3

- 3.1 3.1.1 (a) Animal proteins ✓ and fats ✓ (2)
- (b) Energy source, ✓ source of fibre, ✓ source of roughage ✓
(Any TWO) (2)
- (c) $18\% \checkmark - 15\% \checkmark = 3\% \checkmark$ (3)
- (d) Diet A ✓ – contains more sugar ✓/ fats/ proteins (2)
- (e) Presence of animal protein ✓ in the diet (1)
- 3.1.2 (a) Obesity refers to excessive fat deposits ✓ in the tissues and around body organs ✓ (2)
- (b) Obesity can lead to coronary heart disease ✓/ high blood pressure /diabetes/ depression/ high cholesterol which may lead to the loss of life ✓ (2)
- (c) Causes of diabetes
- Excessive consumption of carbohydrate rich food ✓/high energy rich food,
 - causing the excessive accumulation of blood glucose in the body ✓
 - The hormone insulin fails to convert excessive glucose ✓ to glycogen ✓ and be stored in the liver.
- Treatment of diabetes
- Insulin dose injection ✓
 - change in the diet ✓
 - eating strict diet with less kilojoules ✓
 - regular exercise ✓
 - by reducing weight-using weight-loss programs ✓ (7)
- 3.2.1 Photosynthesis ✓/ transpiration ✓/ gaseous exchange/ guttation/ respiration (Any TWO) (2)
- 3.2.2 Mesophyll tissue ✓ (1)
- 3.2.3 Gaseous exchange ✓ (1)
- 3.2.4 Part A, ✓ Palisade mesophyll ✓ (2)
- 3.3 3.3.1 Hinge joint ✓ (1)
- 3.3.2 A, ✓ B ✓ and C ✓ (3)
- 3.3.3 F – metacarpal ✓
G – ligament ✓ (2)

	3.3.4	14 ✓	(1)
	3.3.5	(a) biceps ✓ and triceps ✓	(2)
		(b) Proteins ✓	(1)
		(c) Muscles work antagonistically in pairs but with opposite effect to each other ✓	(1)
		(d) The person will not be able to lift the arm ✓/ to carry the heavy load	(1)
3.4	3.4.1	Metaphase ✓	(1)
	3.4.2	chromosomes line up at the equator ✓	(1)
	3.4.3	A – Spindle fibre ✓	(1)
		B – Chromosome ✓/ chromatid	(1)
		C – Centriole ✓	(1)
	3.4.4	Anaphase ✓	(1)
	3.4.5	2 ✓chromosomes	(1)
	3.4.6	Cancer ✓	(1)
	3.4.7	- Growth ✓	
		- Replace and repair worn out cell or tissue ✓	
		- Asexual reproduction ✓	(3)
			[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150