Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 10

NOVEMBER 2017

LIFE SCIENCES P1
MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 9 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**

   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 parts.

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. Memorandum 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 learner's 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 memorandum**

    No changes must be made to the memoranda without consulting the provincial internal moderator.

SECTION A

QUESTION 1

1.1	1.1.1	B ✓✓		
	1.1.2	C ✓✓		
	1.1.3	B ✓✓		
	1.1.4	C ✓✓		
	1.1.5	D ✓✓		
	1.1.6	A ✓✓		
	1.1.7	A ✓✓		
	1.1.8	A ✓✓	(8 x 2)	(16)
1.2	1.2.1	Sodium ✓✓		
	1.2.2	Denaturation ✓✓		
	1.2.3	Protoplasm ✓✓		
	1.2.4	Leucoplasts ✓✓		
	1.2.5	Epidermal / Epidermis ✓✓		
	1.2.6	Immunity ✓✓		
	1.2.7	Guttation ✓✓	(7 x 2)	(14)
1.3	1.3.1	B only ✓✓		
	1.3.2	None ✓✓		
	1.3.3	B only ✓✓		
	1.3.4	B only ✓✓		
	1.3.5	None ✓✓		
	1.3.6	A only ✓✓		
	1.3.7	Both A and B ✓✓	(7 x 2)	(14)
1.4	1.4.1	Speed up chemical reactions ✓ without being used up in the reaction. ✓		(2)
	1.4.2	- Proteases are enzymes that break down proteins. ✓ - Helps to work on breaking down blood, egg and gravy stains that are protein in nature. ✓		(2)
	1.4.3	5: glucose ✓ 6: glucose ✓		(2)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 B: cytoplasm ✓
E: nucleoplasm ✓ (2)

2.1.2 (a) D ✓

(b) A ✓

(c) H / I ✓ (3)

2.1.3 - Rod shaped ✓
- Surrounded by a double membrane ✓
- Inner membranous projections called cristae ✓ (Any 2 x 1) (2)

2.1.5 ✓

Plant cell	Animal Cell
1. Cell wall present ✓	1. No cell wall present ✓
2. Plastids present ✓	2. No plastids present ✓
3. Large vacuoles	3. Small or no vacuoles

Any 2 reasons (2 x 2)
1 mark for table (5)

2.2 2.2.1 A: Interphase ✓
B: Prophase ✓
C: Metaphase ✓
D: Anaphase ✓ (4 x 1) (4)

2.2.2 - Spindle fibres contract ✓
- Two chromatids pull apart ✓
- to opposite sides of the cell (poles) ✓
- Chromosomes split at the centromere ✓ (Any 3 x 1) (3)

2.2.3 - Growth: Increase in size of the organism ✓
- Replacement of dead cells ✓
- Responsible for asexual reproduction in certain plants and animals ✓
- Repairs damaged tissues ✓ (Any 2 x 1) (2)

2.2.4

Animal cell	Plant cell
Cytokinesis occurs through a constriction / invagination ✓ of the cell membrane, and two cells are formed	Cytokinesis occurs through the formation of a cell plate ✓ from the centre of a cell and divides the cell into two

(2)

2.2.5 (a) - Smoking ✓
- Radiation ✓
- Hormonal imbalances ✓
- Viruses ✓
- Exposure to certain chemicals and pollutants ✓
(Any reasonable answer) (Any 3 x 1) (3)

(b) Chemotherapy / Surgery / Radiotherapy ✓✓ (2)

2.3 2.3.1 1 – Cuticle ✓ (1)

2.3.2 - Transparent, allows light to enter ✓
- Prevents water loss ✓ (Any 1 x 1) (1)

2.3.3 - Cells are cylindrical ✓
- Thick walls impregnated with lignin ✓
- Large lumen ✓
- Long tubes with bores ✓
- No cell contents (dead cells) ✓
- - Cross walls are perforated / absent ✓ (Any 3 x 1) (3)

2.4 2.4.1 7,8 g ✓ (1)

2.4.2 - Storage of energy ✓
- Make up part of cell membranes ✓
- Component of chromosomes ✓
- Enzymes are proteins, control chemical reactions in organisms ✓
- Hormones are proteins that control growth and development ✓
(Any 2 x 1) (2)

2.4.3 Yes. ✓ Low level of saturated fat in relation to total fat content. ✓ (2)

2.4.3 Amount of sodium in one sausage = 380 mg (0,38 g)

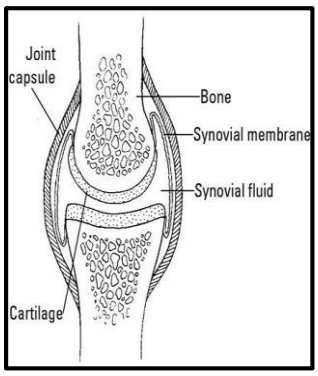
Amount of sodium in three sausages = 3 x 380 mg / (3 x 0,38)
= 1 140 ✓ mg ✓/ (1,14 g) (2)
[40]

QUESTION 3

3.1 3.1.1
- Movement: Skeleton with attached muscles allows for movement ✓
- Protection: Protects internal organs of the body ✓
- Storage of minerals: Various minerals such as calcium stored by the bones ✓
- Framework: Gives body shape ✓ (Any 2 x 1) (2)

3.1.2 A ✓ and B ✓ (2)

3.1.3



1 mark diagram
1 mark caption
3 marks labels

Synovial joint (5)

3.1.4 G ✓ (1)

3.1.5 (a) Biceps ✓ and triceps ✓ (2)

(b) Protein ✓✓ (2)

(c)
- Muscles work in opposition ✓ to each other (antagonistic)
- When one contracts ✓ the other relaxes ✓ **OR** (biceps contract, triceps relax) ✓ (3)

(d) It will prevent the straightening ✓ of the arm. (1)

3.1.6 Osteoporosis, ✓ Rickets ✓ of Arthritis ✓ (Any 2 x 1) (2)

3.2 3.2.1 Potometer ✓ (1)

3.2.2
- Ensure that twig fits securely into rubber stopper. ✓ Seal with Vaseline ✓
- Cut the stem underwater ✓ to prevent air bubbles forming in xylem. ✓
- Cut stem at an angle ✓ to ensure no damage to xylem. ✓ (Any 1 x 2) (2)

3.2.3 The speed of movement of the air bubble will be greatly reduced. ✓ Vaseline prevents transpiration at the ventral surfaces ✓ by blocking the stomata. ✓ (3)

3.2.4 To allow it to acclimatise ✓ to the environment. (1)

3.2.5 As the temperature increases ✓ the transpiration rate will increase ✓

OR

As the temperature increases ✓ the transpiration rate will decrease ✓

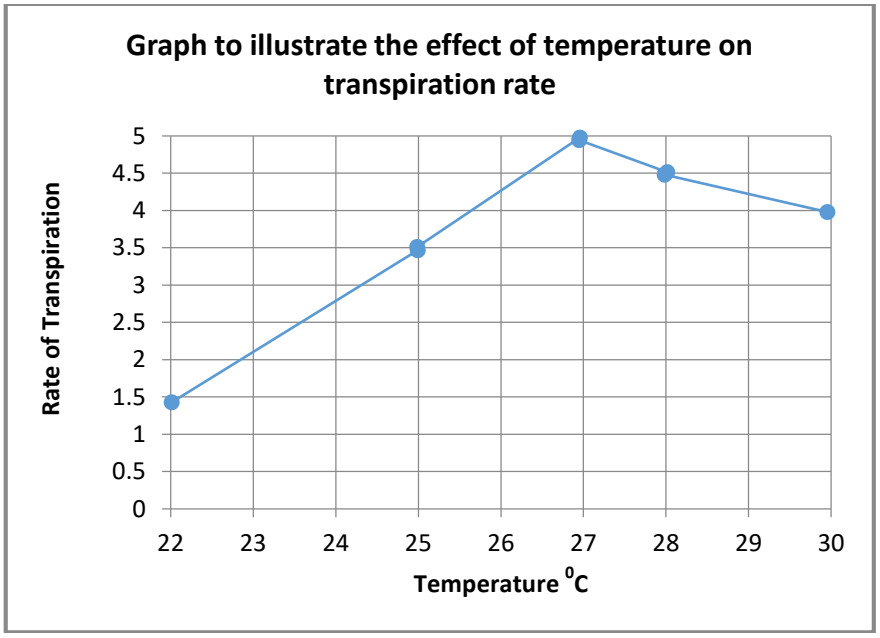
OR

Change of temperature will have NO effect ✓ on the rate of transpiration ✓ (2)

3.2.6 (a) Transpiration rate ✓ (1)

(b) Temperature ✓ (1)

3.2.7



Rubric: graph

Type of graph	1 ✓
Heading for graph	1 ✓
Correct scale X-axis and Y-axis	1 ✓
Correct label X and Y-axis	1 ✓
Plotting of values	2 ✓✓
Joining of points	1 ✓

(7)

3.2.8 - As the temperature increases the rate of transpiration increases ✓ to an optimum temperature
- The transpiration rate then starts to decrease. ✓ (2)

[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

4.1 **What stem cells are**

- Undifferentiated cells ✓ that have the ability ✓ to form any cell or tissue ✓ in the body (Max. 3) (3)

Where stem cells are harvested from

- Stems cells from embryonic tissue ✓
- Stems cells from foetal tissue ✓ (Max. 2) (2)

Uses of stem cells

- Replace neurons ✓ damaged by injuries to the spinal cord ✓
- Produce insulin ✓ that could treat people with diabetes ✓
- Replace heart muscle cells ✓ that could repair damage after a heart attack ✓
- Portion of bone marrow collected ✓Bone marrow transplants ✓ (Any 2 x 2) (4)

Arguments for stem cell research

- Embryos only small amounts of undifferentiated ✓ tissue
- Embryos will be destroyed anyway ✓
- Stems cells harvested from cord blood ✓ does not destroy the embryo ✓ (Max. 4) (4)

Arguments against stem cell research

- Using stem cells for research, embryos are living organisms ✓ unacceptable to destroy them ✓
- Destruction of embryos ✓ is immoral. ✓ Against moral and religious Beliefs. (Max. 4) (4)

Content: (17)
Synthesis: (3)

ASSESSING THE PRESENTATION OF ESSAY

Criterion	Relevance (R)	Logical sequence (L)	Comprehensive (C)
	All information provided is relevant to the topic	Ideas arranged in a logical/cause-effect sequence	Answered all aspects required by the essay
In this essay	Only information relating to the definition of stem cells, how they are harvested, uses and ethical issues (There is no irrelevant information.)	Logical sequence of events in description of stem cells, how they are harvested, and the ethical issues associated with them	Includes sufficient information on all aspects
Mark	1	1	1

TOTAL SECTION C: 20
GRAND TOTAL: 150