Education and Sport Development
Department of Education and Sport Development
Departement van Onderwys en Sportontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

JUNE 2019

MEMORANDUM

MARKS: 150

This memorandum consists of 12 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 is 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 provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names 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)**

    No 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 appears 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. No changes must be made to the marking memoranda

SECTION A

QUESTION 1

1.1.1 C✓✓
1.1.2 C✓✓
1.1.3 B✓✓
1.1.4 B✓✓
1.1.5 C✓✓
1.1.6 A✓✓
1.1.7 D✓✓
1.1.8 D✓✓
1.1.9 B✓✓
1.1.10 B✓✓ **(20)**

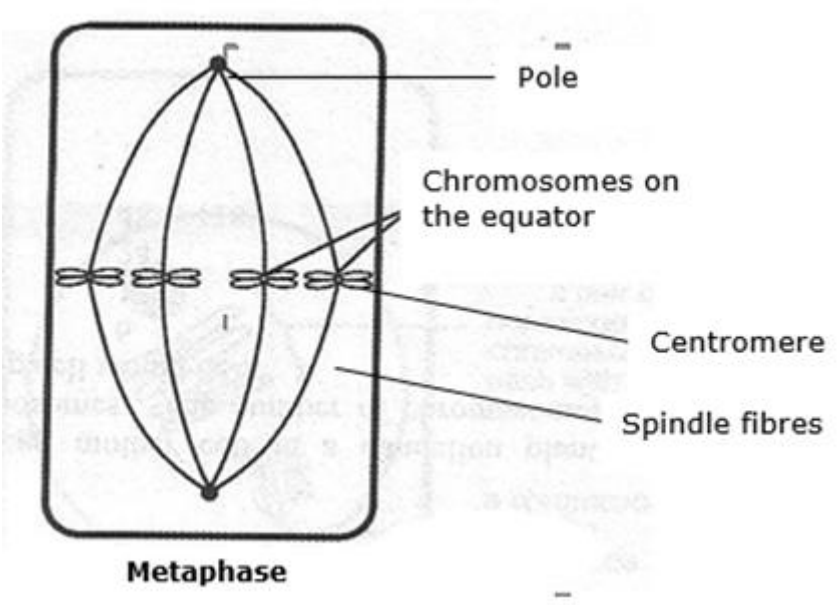
1.2.1 Stage ✓
1.2.2 Chlorophyll ✓
1.2.3 Centriole ✓
1.2.4 Lysosome✓
1.2.5 Benign tumour✓
1.2.6 Hydrostatic skeleton✓
1.2.7 Natural/passive immunity✓
1.2.8 Axial✓ **(8)**

1.3.1 Both A and B✓✓
1.3.2 Both A and B✓✓
1.3.3 A only✓✓
1.3.4 A only✓✓
1.3.5 None✓✓ **(10)**

1.4.1 Telophase✓ (1)

1.4.2 Nuclear membrane reappears✓
Cytokinesis takes place✓
Two identical cells are formed✓
Spindle fibres disappeared✓ **any 2** (2)

1.4.3



Title of the diagram	1
Correct stage	1
Any THREE correct labels	3

(5)

1.4.4. Mitosis✓ (1)

1.4.5. Chemotherapy✓
Radiation✓
Surgery✓
Traditional medicines✓ any 3 (3)
(12)

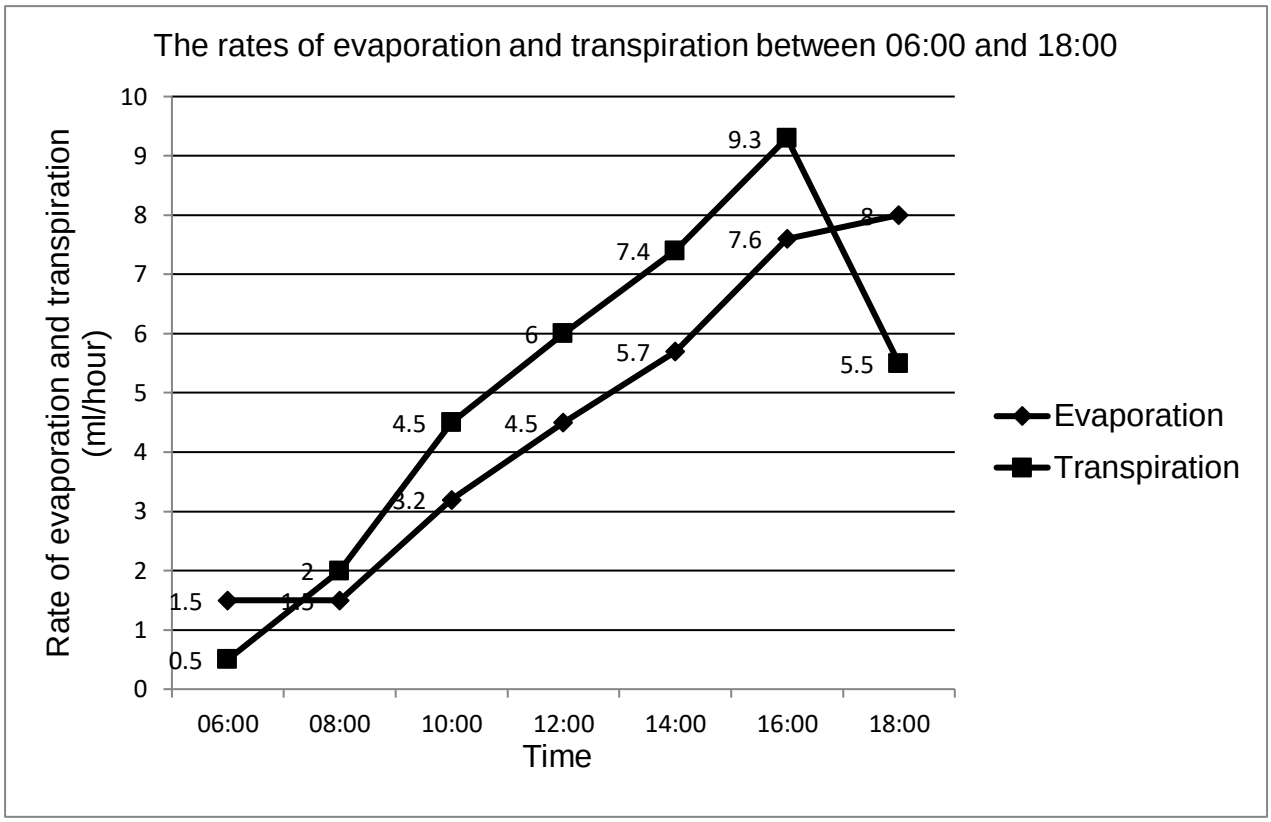
TOTAL QUESTION 1 (50)

TOTAL SECTION A (50)

SECTION B

QUESTION 2

2.1.1



Mark allocation for the graph

Criteria	Mark allocation
Correct type of graph	1
Title of graph including the two variables	1
Correct label and unit for X-axis and Y-axis	1
Correct scale for X-axis and Y-axis	1
Key	1
Drawing of the graphs	0: No points plotted correctly 1: 1 to 7 points plotted correctly 2: All 14 points plotted correctly

(7)

2.1.2 16:00✓ (1)
2.1.3 4.5 +5.7 +7.6 +8.0✓ =25.8✓ml✓ (3)
2.1.4 Increased temperature✓
Increased light intensity✓
Wind✓
Low humidity✓ any 2 (2)
2.1.5 Repeat the experiment✓ to get a good average reading✓ (2)

(15)

2.2.1 A - Blood✓
B - Bone✓
E - Cartilage✓ (3)
2.2.2
a. E✓
b. D✓
c. F✓ (3)
2.2.3 More oxygen can be carried by the erythrocytes✓ and there is more space for haemoglobin which combines with oxygen to form oxy-haemoglobin✓ (2)
2.2.4 Plasma✓
Leucocytes✓ /lymphocytes
Platelets✓ (3)

2.2.5
a. Blood of the anaemic person has fewer erythrocytes and therefore less haemoglobin✓
The blood is therefore less red✓making the anaemic to appear pale (2)
b. Less oxygen is carried to the body cells by erythrocytes since there is less haemoglobin✓
Cells cannot undergo maximum respiration✓
Less energy is available✓
To generate heat✓to keep the body warm any 2 (2)

(15)

2.3.1 Stem cells that are taken from embryos✓ which can differentiate in any tissues✓ (2)

2.3.2 It contains the genetic material in DNA (1)

2.3.3 Contain the same chromosomes because the embryonic cell has divided by mitosis ✓ (1)

2.3.4 The nucleus and genetic material originated from another sheep✓ (1)

2.3.5 Produce superior livestock to produce more rapidly✓
As market changes livestock can be bred to respond to market changes and demands✓
Promote commercial crops that produce quickly✓
Producing fruit and vegetable varieties to extend shelf life of fresh produce✓
Allows less wastage of food and transport costs✓
Mark FIRST TWO only (2)

2.3.6 Against religious and moral believes✓
It is not safe don't know what can happen to clone✓
Against nature✓
Expensive✓
Reduce genetic variation✓ any 3 (3)
(10)

TOTAL QUESTION 2 (40)

QUESTION 3

3.1.1

a. Metatarsal✓ (1)
b. Tibia✓ (1)

3.1.2 Sprain -the ligaments and connective tissue✓ is torn and swells✓
Fracture- the bone✓ is cracked or completely broken✓
Dislocation – the bone✓ has moved out of position✓ (6)

3.1.3 Vertebral column✓ (2)

3.1.4 Protects the spinal cord. ✓✓ (1)

3.1.5 Good support and attachment for muscles✓
Reduces water loss✓
Thin and flexible at joints for quick movement✓
Protection✓ (4)
(15)

3.2.1 Animal✓

3.2.2 Small vacuole✓
Irregular shape✓

3.2.3 3✓

3.2.4

1 Golgi body✓ plays a role in producing and processing secretions such as mucus and saliva.✓/ Prepares proteins for transport to other parts of the cell✓
2 Mitochondrion✓ responsible for cellular respiration (energy production) ✓
3 Cell membrane✓ controls movement of substances into and out of the cell✓

3.2.5

Plant cell	**Animal cell**
• Has a regular shape✓ • Cell wall present✓ • Has a large vacuole✓ • Has no centriole✓ • May have plastids✓	• Has an irregular shape✓ • Cell wall absent✓ • Has small numerous vacuole✓ • Has centriole✓ • Have no plastids✓

3.3.1 A - Root hair✓ (1)
B - Cortex✓ (1)

3.3.2 Finger-like projection✓ that increases absorption surface
thin cell wall✓
without cuticle✓ and
permeable✓ to absorb water from the soil any 2 (2)

3.3.3 From the cortex to the xylem✓ (1)

3.3.4

a. Semi-/partially/ selectively permeable✓ membrane (1)

b. Form elongated tubes✓ for rapid movement✓
Continuous tubes from roots to leaves✓ for easy conduction of water from cell to cell✓
are made up of a series of tubular vessels with large lumen✓to allow water to move straight upwards. ✓
thickened secondary walls impregnated with lignin✓ to withstand extreme tension of adhesion and cohesion✓
are non-living and form long hollow conducting tubes✓ to facilitate easy transport of water✓
pits in walls✓ allow for lateral transport of water✓
Any 2 x 2 (4)
(10)

TOTAL QUESTION 3: (40)

TOTAL SECTION B: (80)

SECTION C

QUESTION 4

Organic Compounds

Carbohydrates

- They are made up of the elements carbon, hydrogen and oxygen. ✓
- Ratio of H-atoms: O atoms is 2:1✓
- The basic unit or monomer for carbohydrate is saccharides✓
- Three groups according to the number of saccharides. Mono-, di-, polysaccharides✓
- Carbohydrates are composed of thousands of monomers called polysaccharides✓
- Are a source of energy√ structural components✓

Max. (6)

Lipids

- They are made up of the three elements carbon, hydrogen and oxygen✓
- The ratio of H: O is greater than 2:1✓
- The monomers of lipids are three fatty acids and one glycerol✓.
- They protect the body organs (shock absorption) ✓
- Are structural components of cell membranes✓
- Are chemical messengers of hormones✓
- Are sources of reserve energy✓ and insulating material✓
- Waterproofing, ✓
- Absorption of vitamins✓ and a source of water✓

Max (6)

Proteins

- Made up of elements carbon, hydrogen, oxygen✓ and nitrogen✓
- The monomers are amino acids✓.
- It is long chains of amino acids that folds and loops back onto themselves✓
- They provide structure. Organic catalysts are mostly made up of proteins✓
- Play a role in the permeability of cell membranes✓
- Structural component of protoplasm✓
- Hormones regulate processes in the body√ and
- Protect the body against disease. (antibodies) ✓

Max (5)
Content: (17)
Synthesis: (3)

TOTAL QUESTION 4 (20)

ASSESSING THE PRESENTATION OF THE ESSAY

RELEVANCE (R)	**LOGICAL SEQUENCE (L)**	**COMPREHENSION (C)**
All information provided is relevant to the question	Ideas are arranged in a logical/cause-effect sequence	Answered all aspects required by the essay in sufficient details
Only information relating to organic compounds, their building blocks and functions is included. (No information on inorganic compounds and no examples are given)	The elements and functions are presented in the **logic** order	Provided **sufficient information** about organic substances, elements, ratio, monomers and functions. The following points should be included: Carbohydrates **(min 4/6)** Lipids **(min 4/6)** Proteins **(min 3/5)**
1 mark	**1 mark**	**1 mark**

TOTAL SECTION C 20
GRAND TOTAL 150