



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

LIFE SCIENCES P1

SEPTEMBER 2019

MEMORANDUM

MARKS: 150

TIME: 2 $\frac{1}{2}$ hours

This memorandum consists of 11 pages

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2019

1. **If more information than marks allocated is given**
Stop marking when maximum marks are 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-recognized abbreviations**
Accept if first defined in answer. If not defined, do not credit the unrecognised 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 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)**
No credit.
15. **If units are not given in measurements**
Memorandum will allocate marks for units separately, except where it is already given in the question.
16. Be sensitive to the **sense of an answer, which may be stated in a different way.**
17. **Caption**
Credit will be given for captions to all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.
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.

SECTION A**QUESTION 1**

1.1

- 1.1.1 B ✓✓
- 1.1.2 B ✓✓
- 1.1.3 C ✓✓
- 1.1.4 A ✓✓
- 1.1.5 D ✓✓
- 1.1.6 A ✓✓
- 1.1.7 B ✓✓
- 1.1.8 B ✓✓
- 1.1.9 C ✓✓
- 1.1.10 A ✓✓

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

1.2

- 1.2.1 Poaching ✓
- 1.2.2 Absciscic acid ✓
- 1.2.3 Apical dominance ✓
- 1.2.4 CO₂✓/carbon dioxide
- 1.2.5 Cerebellum ✓
- 1.2.6 Myelin sheath✓
- 1.2.7 Thyroxin ✓
- 1.2.8 Allantois✓
- 1.2.9 Hypophysis✓/Pituitary gland
- 1.2.10 Parental care✓

(10 x 1) **(10)**

1.3

- 1.3.1 Both A and B ✓✓
- 1.3.2 None ✓✓
- 1.3.3 A only ✓✓

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

1.4

- 1.4.1 Aldosterone✓ (1)
- 1.4.2 Adrenal gland✓ (1)
- 1.4.3 It increases✓ (1)
- 1.4.4 It decreases✓ (1)
- 1.4.5 Collecting ducts✓ /distal convoluted tubules/renal tubules
(1) **(5)**

1.5

- 1.5.1 (a) F✓ Anther✓ (2)
- (b) C✓ Endometrium✓ (2)
- (c) A✓ Fallopian tube✓ (2)
- 1.5.2 B✓and H✓ (2)
- 1.5.3 Cervix✓ (1) **(9)**

TOTAL QUESTION 1: [50]
TOTAL SECTION A : 50

QUESTION 2

2.1 2.1.1 There is an extra chromosome/ three chromosomes/ XXY at the sex chromosome pair/gonosome pair ✓ (1)

2.1.2 47✓ (1)

- 2.1.3
- Small testes✓/seminiferous tubules abnormal
 - Underdeveloped muscles✓
 - Spermproduction very low✓/no spermproduction
 - No facial/pubic hair✓/sparse facial/pubic hair
 - Lack of testosterone production
 - Voice does not deepen ✓
- Any 3 (3)

MARK FIRST THREE ONLY

- 2.1.4
- During Anaphase I ✓
 - The **sex chromosome pair**✓/gonosome pair/ does not separate
 - An abnormal gamete forms✓ with
 - An **extra copy of an X-chromosome**✓/gonosome/sex chromosome
 - Fusion between an abnormal gamete with a normal gamete✓ leads to Klinefelter's Syndrome (5)

OR

- During Anaphase II✓
- The **chromatids of the sex chromosome**✓ /gonosome does not separate
- An abnormal gamete forms✓ with
- An **extra copy of a X-chromosome**✓/gonosome/sex chromosome
- Fusion between an abnormal gamete with a normal gamete✓ leads to Klinefelter's Syndrome

- 2.1.5
- Under the influence of testosterone✓
 - Diploid cells in the semineforous tubules of the testes✓
 - Undergo meiosis to form haploid sperm cells✓ (3)
- (13)**

2.2

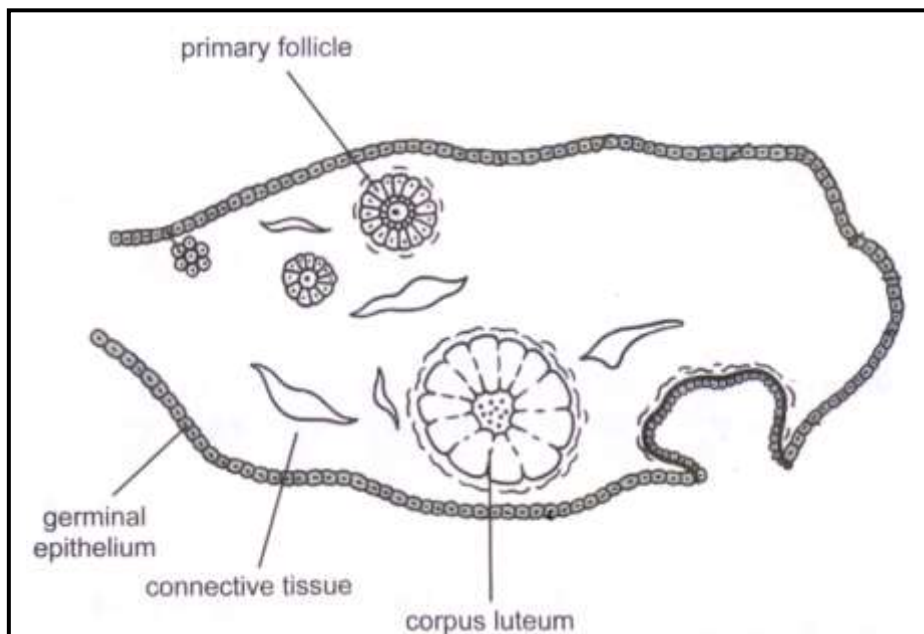
2.2 2.2.1 (a) P (1)

(b) S (1)

2.2.2 Increased progesterone and oestrogen concentrations

- stops the the pituitary gland✓
- secreting FSH✓
- and LH✓
- This prevents the development of a Graafian follicle✓
- And ovulation is impaired✓
- No ova no fertilisation✓

(5)

2.2.3 Ovary**Marking rubric**

Code		Mark
D	Correct sketch of ovary with only primary follicle and corpus luteum	1
L	3 Correct labels	3
Total		4

(4)

(11)

- 2.3 2.3.1 Hazel✓ (1)
- 2.3.2 Hazel has the smallest range of sound✓
And won't be able to hear most of the frequencies of sound✓ (2)
like other learners
- 2.3.3 The sound bats make range of frequency of sound is much
higher✓
than what can be heard by humans✓/than the hearable range of
frequencies of humans. (2)
(5)
- 2.4 2.4.1 (a) Tympanum✓ - converts sound waves to vibrations which are
transmitted to the ossicles✓ (2)
- (b) Oval window✓ – transfer vibrations as pressure waves to the
inner ear✓ (2)
- 2.4.2 The ossicles are arranged from big to small✓
which concentrate the soundwaves✓ (2)
- 2.4.3
- The maculae are stimulated ✓
 - by changes in the position of the head✓
 - the maculae convert the stimulus into nerve impulses✓
 - which are transported via the auditory nerve✓
 - to the cerebellum to be interpreted✓
- (5)
(11)
[40]

QUESTION 3

3.1 3.1.1 They add up the measured length of all the coleoptiles in a pot✓
and divide the total length by the total number of the coleoptiles
in the pot✓ (2)

3.1.2 In pot **B** and **C** the tip of the coleoptiles which produce auxins
were still intact✓
Auxins promotes growth✓ (2)

OR

In pot A the tips of the coleoptiles that contain auxins were cut✓
Auxins promote growth✓

3.1.3 (a) No growth✓ (1)

(b) Grow straight up/no reaction to stimulus✓ (1)

(c) Towards light stimulus✓ (1)

(8)

3.2 3.2.1 (a)
▪ The medulla oblongata regulates vital life processes✓
▪ like breathing rate/ heart rate ✓ (2)

(b)
▪ The right cerebral cortex controls the left-hand side of the
body✓
▪ A blood clot in the right cerebral cortex will **inhibits**
voluntary action in the left-hand side of the body✓ (2)

3.2.2
▪ For the body to react to stimuli✓
▪ And to coordinate various activities of the body✓ (2)

3.2.3 **Differences between nervous and chemical coordination.**

Nervous	Chemical
Impulses are conducted through neurons to target organs✓	Impulses are conducted through the blood stream to target organs✓
The response is executed by an effector organ✓	The response is executed by the target organs✓
Messengers are electro-chemical impulses. ✓	Messengers are hormones✓
Response is specific at a certain muscle/gland✓	Response is spread throughout the body to several target organs✓.

MARK FIRST TWO ONLY

Any 2 X 2 + 1 for table (5)

3.2.4 E✓cranial nerves✓
F✓spinal nerves✓ (4)

3.3 3.3.1 It acts as a control✓
where the results can be measured against✓
OR
To ensure that results are caused only by glucose intake✓✓ (2)

3.3.2

- Low blood sugar✓
- stimulates the pancreas✓
- to produce more glucagon✓
- which convert glycogen into glucose✓
- glucose level rise to normal✓ any 4 (4)

3.3.3

- Patient 1 and 3's blood sugar levels decrease 30 minutes after glucose were ingested✓
- to lower than 200 mg/100ml✓ (2)

3.3.4

- Adrenalin are produced✓
- Which stimulates the conversion of glycogen to glucose✓ (2)

(10)

3.4 3.4.1

- Increased temperatures✓
- cause ice to melt in the glaciers✓
- which cause rising sea levels✓ (3)

3.4.2

- The numbers of the jelly-fish population is going to increase✓
- Causing the numbers of the plankton population to decrease✓ (2)

3.4.3 Decaying matter will pollute the sea water✓ which results in the dying of fish in the sea✓/Food security will decrease✓ (2)

OR
Decaying matter will increase global warming✓
which results in unstable weather patterns✓
which cause food crops to fail✓

(7)
TOTAL SECTION B: 80 [40]

SECTION C**QUESTION 4**

Need or food

- After water is used for **industrial purposes**
- it may contain many heavy metals,
- and oil
- This adversely affects the quality of the water
- and all life that depends on it.

- Water used for **agriculture** may contain
- pesticides,
- herbicides and
- fertilizers which pollute the water in rivers, dams and lakes,
- causing eutrophication.
- The added nutrients
- lead to an increase in algal growth (algal bloom).
- These algae over-use and thus deplete the oxygen in the water,
- causing aquatic organisms to die

- **Thermal pollution**
- refers to the heating of water caused by the use of
- water for cooling industries.
- Heated water has a lower oxygen content,
- making it difficult to support life.

(Any 9) (9)

Water levels

- When the water levels in the blood decreases:
- Receptor cells in the
- Hypothalamus is stimulated
- which sends impulses to the pituitary gland
- into secreting more ADH
- which travels in the blood to the kidneys
- It increases permeability of the collecting ducts
- and the distal convoluted tubules
- More water is reabsorbed
- And passed to the surrounding blood vessels
- Water level returns to normal

(any 8) (8)

ASSESSING THE PRESENTATION OF THE ESSAY		
Relevance (R)	Logical sequence (L)	Comprehensive (C)
All information provided is relevant to the question	Ideas arranged in a logical/cause-effect sequence	Answered all aspects required by the essay in sufficient detail
All information relevant to <ul style="list-style-type: none"> • Water quality and food • Regulating of low water 	All information on <ul style="list-style-type: none"> • Water quality and food • Regulation of low water is in a logical sequence	The following must be included <ul style="list-style-type: none"> • Water quality and food (6/9) • regulating of low water (5/8)
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL:150