



education

DEPARTMENT: EDUCATION
MPUMALANGA PROVINCE

INSIKAZI CIRCUIT

GRADE 12

LIFE SCIENCES PRE TRIAL PAPER 1

2020

MARKING GUIDELINES

MARKS: 150

TIME: 2h30 MINUTES

This memorandum consists of 8 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2011

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-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 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

SECTION A**QUESTION 1**

1.1	1.1.1	C✓✓		
	1.1.2	A✓✓		
	1.1.3	D✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	D✓✓		
	1.1.7	C✓✓		
	1.1.8	C✓✓		
	1.1.9	A✓✓		
	1.1.10	C✓✓		
			(10 x 2)	(20)
1.2	1.2.1	Peripheral✓		
	1.2.2	Geotropism✓		
	1.2.3	Pancreas✓		
	1.2.4	Amniotic✓		
	1.2.5	TSH✓		
	1.2.6	Prolactin✓		
	1.2.7	Eustachian tube ✓		
	1.2.8	Vivipary✓		
			(8x1)	(8)
1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	A only ✓✓		
	1.3.4	A only ✓✓		
			(4x2)	(8)
1.4	1.4.1	(a) Diagram 1✓		(1)
		(b) Diagram 2✓ and Diagram 3✓		(2)
		(C) Diagram 1✓ and Diagram 2✓		(2)
	1.4.2	Amniotic✓ egg		(1)
				(6)
1.5	1.5.1	(a) A✓ - ciliary muscle✓		(2)
		(b) C✓ - iris✓		(2)
		(C) D✓ - cornea✓		(2)
	1.5.2	Accommodation✓		(1)
	1.5.3	Diagram 2✓		(1)
				(8)
			Question 1:	[25]
			TOTAL SECTION A:	[25]

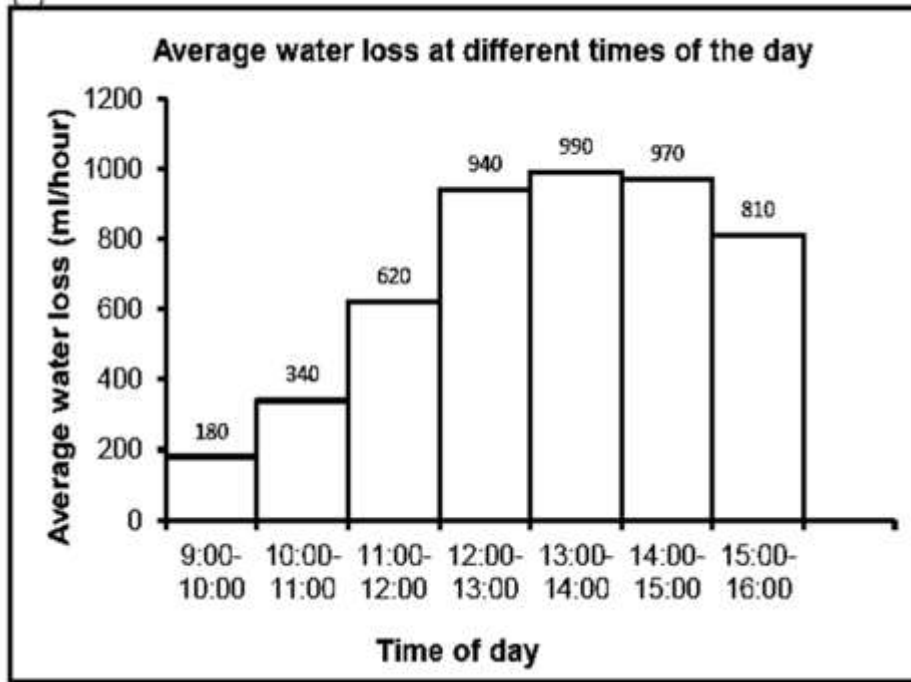
SECTION B**QUESTION 2**

- 2.1 2.1.1 (a) Centromere✓ (1)
 (b) Chiasma✓/chiasmata (1)
 (c) Homologous chromosomes✓ /-chromosome pair/bivalent (1)
 (d) Chromatid✓/sister chromatid (1)
- 2.1.2 - Similar shape✓/similar centromeres
 - size✓ and
 - genetic composition✓
(Mark first TWO only) (Any 2) (2)
- 2.1.3 -in prophase 1✓
 - Non-sister chromatids/one chromatid in each homologous chromosome pair✓
 - touch✓/overlap
 - at a point called the chiasma✓
 - DNA/genetic material is crossed over ✓/swopped at the chiasma (5)
- 2.1.4 (a) 21✓ (1)
 (b) 42✓ (1)
 (c) 21✓ (1)
[14]
- 2.2 2.2.1 A- Urethra✓ (1)
 B- Vas deferens✓/sperm duct (1)
 C- Prostate gland✓ (1)
 E- Uterus✓ (1)
 F- Fallopian tube✓/oviduct (1)
 G- Ovary✓ (1)
- 2.2.2 (a) - Protects the sperm cell against the acidic environment of the vagina✓
 - Increases the motility of the sperm✓
 - Provides nutrients✓
(Mark first ONE only) Any (1)
- (b) - Place for foetus to develop ✓
 - Maintain pregnancy✓
 - Assist in childbirth✓
 - Implantation✓ of blastula
 - Protects the foetus✓/prevents infections(mucus plug forms by cervix)
 - Passage for sperm cells✓between vagina and fallopian tubes
(Mark first ONE only) Any (1)

	2.2.3	(a) D✓ (b) G✓	(1) (1)
	2.2.4	(a) Spermatogenesis✓ (b) Oogenesis✓	(1) (1)
	2.2.5	- Serves as a birth canal✓ - Allows for passage of blood/ endometrial lining/amniotic fluid/placenta - Facilitates sexual intercourse ✓/receives semen - Secretes acid which prevents infections✓ (Mark first TWO only)	Any (2)
	2.2.6	- To keep the testes at a temperature that is lower✓ than body temperature✓/optimum temperature for sperm production - which is necessary for the production of healthy sperm✓/so that healthy sperms can survive	(3) [17]
2.3	2.3.1	Day 14✓/15	(1)
	2.3.2	Day 0–6✓/day 0–7	(1)
	2.3.3	Stimulates follicle✓/ovum development in the ovary/secretion of oestrogen	(1)
	2.3.4	- stimulates the bursting of the Graafian follicle to release the ovum✓/stimulates ovulation - stimulates the conversion of the Graafian follicle into the corpus luteum ✓	(2)
	2.3.5	An increase in progesterone level✓ inhibits the release of FSH✓ OR FSH stimulates the development of the ovum✓ and progesterone prepares for implantation ✓when this ovum is fertilised	(2)
	2.3.6	No✓	(1)
	2.3.7	- Corpus luteum has degenerated✓ - Progesterone level has decreased✓ - FSH level starts to rise✓ - LH level decreases✓ (Mark first TWO only)	Any (2) [10]

- 2.4 2.4.1 - Diameter of blood vessels is wider✓/vasodilation occurred
 - More blood to the skin✓
 - More/visible sweat secretion ✓
 (Mark first TWO only) (Any 2) (2)

- 2.4.2 (a) (13:00 - 14:00)✓ (1)
 (b)



Criteria for marking the graph

Title of the graph (both variables)	(C)	1
Histogram is drawn (no spaces)	(T)	1
Correct labels and units for X- and Y-axes (L)		1
Appropriate scale for both axes	(S)	1
Plotting of the graph	(P)	1 to 5 bars drawn correctly: 1
		All 6 bars drawn correctly: 2

NOTE:

If the wrong type of graph is drawn, marks will be lost for:

- Correct type of graph✓
- Appropriate scale✓

(6)

[9]

QUESTION 3

- 3.1 3.1.1 Rapid✓, automatic response✓ to a stimulus (2)
- 3.1.2 A – Sensory neuron✓/Afferent neuron (3)
- B – Interneuron✓/connector neuron/association neuron/relay neuron
- C – Motor neuron✓/Efferent neuron
- 3.1.3 (a) C✓ (1)
- (b) A✓ (1)
- 3.1.4 Protects✓ the human body against further damage✓ (2)
- [9]**
-
- 3.2 3.2.1 (a) Amount of thyroxin✓ (1)
- (b) Body weight✓ (1)
- 3.2.2 - Same number of rats in each group✓
- All rats were of the same species✓
- All groups were investigated for the same period of time✓
- All rats were the same gender✓
- All groups were weighed after the same interval✓
- (Mark first THREE only) (Any 3) (3)
- 3.2.3 Group A✓ (1)
- 3.2.4 - Low thyroxin levels✓
- will lead to low metabolic rate✓
- Therefore the energy from the diet is used very slowly✓
- and more organic compounds are stored✓ (Any 3) (3)
- 3.2.5 Group B✓ (1)
- 3.2.6 - These rats have high levels of thyroxin in their blood✓
- therefore pituitary gland will not be stimulated✓ to secrete TSH (2)
- [12]**

- 3.3 3.3.1 To ensure unilateral light✓/the plant receives light from one direction only (1)
- 3.3.2 Auxins✓/IAA/indole acetic acid (1)
- 3.3.3 Differences between plants A and B after two weeks

T✓

Plant A	Plant B
The stem of the plant will bend towards the light✓	The stem of the plant will remain straight✓/will not bend towards the light
Does not have lateral branches✓/only lower lateral branches will start to grow	All the lateral branches will grow✓ along the whole stem
The plant will be taller✓	The plant will be shorter✓

(Mark first TWO only)

1 table (T) + (2 x 2)

(5)

- 3.3.4 - The gibberellins cause the stem/plant to grow longer✓/taller
- because gibberellins stimulate the elongation/growth of the internodes✓ (2)

[9]**TOTAL SECTION B: [80]****SECTION C****QUESTION 4****Pupillary mechanism ✓**

- The circular muscles of the iris contract. ✓
- The radial muscles relax. ✓
- The pupil constricts. ✓/diameter decreases
- The amount of light entering the eye is reduced. ✓

(Max 5) (5)**Accommodation ✓ for near vision**

- Ciliary muscles contract. ✓
- The suspensory ligaments become slack✓/loose
- The tension on the lens decreases. ✓
- The lens becomes more convex. ✓
- The refractive power of the lens is increased✓/bends more light
- A clear image of the near object is now formed on retina ✓

(Max 6) (6)

Balance is achieved in the following way:

- The maculae✓
- in the utricle and saccule✓ and
- the cristae✓
- in the semi-circular canals✓ are stimulated
- They generate impulses✓
- which is transmitted through the auditory nerve✓
- to the cerebellum✓ where they are interpreted
- Impulses are transmitted via the motor neuron✓
- to skeletal muscles✓

(max 6) (6)
Content:
Synthesis:

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance (R)	Logical sequence (L)	Comprehensive (C)	(17)
General	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 sufficiently detail.	(3)
In this essay in Q4	All the information provided is relevant to the pupillary mechanism, accommodation for the near vision and balance There is no irrelevant information	Description of pupillary mechanism, accommodation for the near vision and balance discussed in a logical sequence.	At least the following marks should be obtained for: <ul style="list-style-type: none"> - describing pupillary mechanism (3/5) - describing accommodation for near vision provided (4/6) - Balance and equilibrium (4/6) 	
Mark	1	1	1	

TOTAL SECTION C: 20
GRAND TOTAL: 100