education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

NATIONAL SERNIOR CERTIFICATE

GRADE 12

LIFE SCIENCES

JUNE 2026

MARKING GUIDELINES

MARKS: 150

These marking guidelines consists of 11 pages.

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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 a 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 annotation 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 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 is accepted at the provincial memo discussion meeting

14. **If only letter is asked for and only 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

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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. **Changes**
    No changes must be made to the marking guidelines without consulting the Provincial Internal Moderator.

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SECTION A

QUESTION 1

1.1	1.1.1	C✓✓	
	1.1.2	B✓✓	
	1.1.3	C✓✓	
	1.1.4	C✓✓	
	1.1.5	A✓✓	
	1.1.6	B✓✓	
	1.1.7	C✓✓	
	1.1.8	A✓✓	
	1.1.9	A✓✓	
	1.1.10	D✓✓	**(20)**

1.2	1.2.1	Homologous✓chromosomes	
	1.2.2	mRNA✓/ messenger RNA	
	1.2.3	Anther✓	
	1.2.4	Anaphase II✓	
	1.2.5	O✓ blood group	
	1.2.6	Thyroid✓ gland	
	1.2.7	Placenta✓	
	1.2.8	Endometrium✓	
	1.2.9	Convex✓	**(9)**

1.3	1.3.1	A only✓✓	
	1.3.2	A only✓✓	
	1.3.3	A only✓✓	**(6)**

1.4

	1.4.1	Species 1✓	(1)
	1.4.2	There is no yolk present since no egg is formed✓/ the embryo is fed/ receives nutrients from the mother's placenta/ umbilical cord	(1)
	1.4.3	Species 3✓	(1)
	1.4.4	The egg contains the most yolk✓ which allows for maximal development✓before hatching	(2)
	1.4.5	Species 1✓	(1) **(6)**

1.5

1.5.1 (a) E✓- cochlea✓ (2)

(b) C✓- semi-circular canals✓ (2)

(c) A✓- Auditory canal✓ (2)

(d) B✓- Ossicles✓ (2)

1.5.2 Sensory✓ neuron (1)

(7)

TOTAL SECTION A: [50]

SECTION B

QUESTION 2

2.1 2.1.1 DNA replication✓ (1)

2.1.2 Interphase✓ (1)

2.1.3 (a) (weak) Hydrogen bond✓ (1)

(b) Phosphate group✓ (1)

(c) Deoxyribose sugar ✓ (1)

2.1.4

- DNA double helix unwinds✓
- And unzips✓/ weak hydrogen bonds break
- To form TWO separate strands✓
- Each strand acts as a template✓
- Using free floating DNA nucleotides ✓
- That attach to complimentary basis✓/ A-T, G-C
- To form TWO identical DNA molecules✓
- This process is controlled by enzymes✓

Any (6)

2.1.5 Y, Z, X, X, W, Y✓✓
all correct = ✓✓
1 mistake = ✓
2 or more mistakes= no marks (2)

(13)

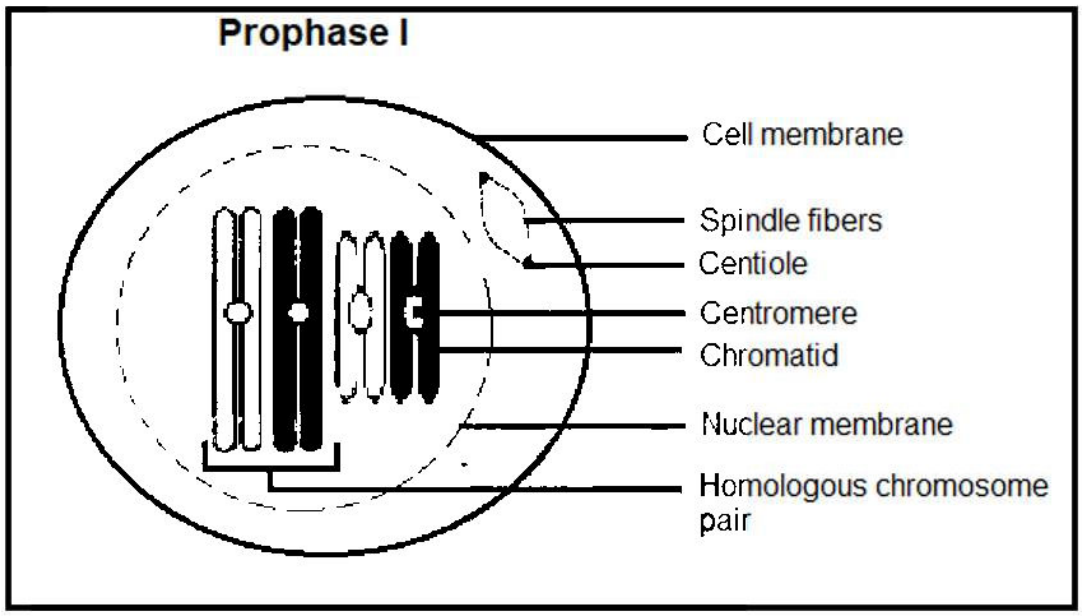
2.2 2.2.1 Anaphase I✓ (1)

2.2.2 a) Chromatid✓ (1)

b) Spindle fiber✓ (1)

2.2.3 Holds chromatids together✓ to form chromosome (1)

2.2.4



Description	Mark allocation
Caption (**C**)	1
4 chromosomes correctly shaded(does not need to be different sizes or arranged in homologous pairs) (**S**)	1
Any ONE correct label (tick on label)	1

(3)

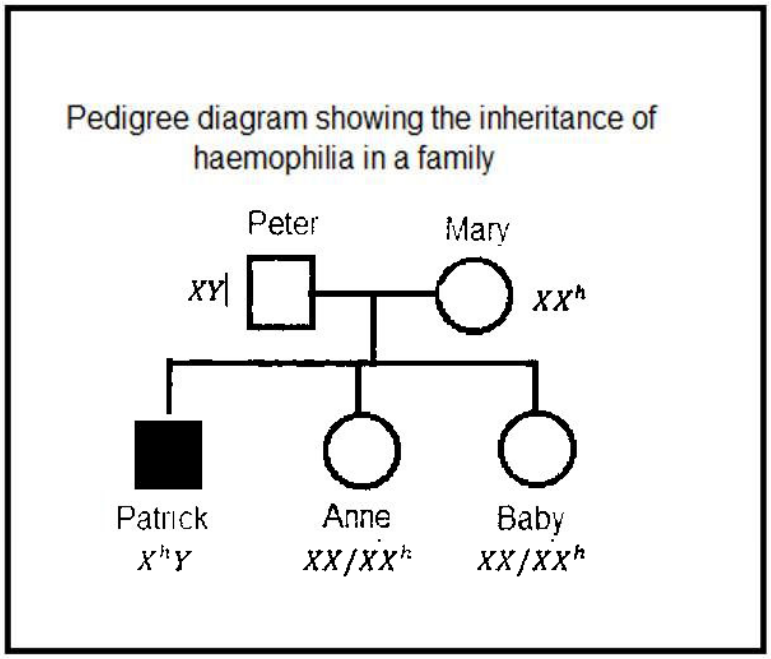
2.2.5 (a) 46✓ (1)

(b) 24✓ and 22✓ Any order (2)

(c) 45✓ (1)

(11)

2.3



Description	Mark allocation
Caption (**C**)	1
All 5 family members included, correct symbols used in drawing (**S**)	1
Diagram (connection lines correct) (**D**)	1
Genotypes (Peter, Mary, Patrick) (**G1**)	1
Genotypes (Anne and baby – must include both options) (**G2**)	1

(5)

2.4 2.4.1 C✓- Testes✓/ Testis (2)

2.4.2 It temporarily stores sperms until maturation✓ (1)

2.4.3 Seminal vesicle✓
- There will be no nutrients/fructose in the semen✓
- The mitochondrion✓ in the sperm will not be able to produce energy✓
- For the tail to swim✓
- Sperm will not be able to reach the ovum✓
- Fertilization will not take place✓ (7)

(10)

2.5 2.5.1 (a) FSH concentration✓ (1)

(b) Rate of follicular development✓ (1)

2.5.2
- Used the same age group of 25-30 years✓
- Health status was the same/ all were non-smokers✓
- Duration of the observation was the same✓
- Ensured that all other hormones (eg LH) are kept constant across all groups✓
- All groups received the same diet✓
- Same timing for measurement✓
- Same measuring equipment was used✓

Any (2)

2.5.3 To see how much extra growth is caused specifically by the increased FSH levels in Group B and Group C✓✓ (2)

2.5.4 AVERAGE= 2,2+4,0+5,8+7,6+9,4= 29✓

$$= \frac{29}{5}\checkmark$$

= 5,8✓ mIU/mL (3)

2.5.5 Higher concentration of FSH increases the diameter of the follicle✓✓ (2)

(11)

[50]

QUESTION 3

3.1	3.1.1	Complete✓ dominance		(1)
	3.1.2	One✓/ 1		(1)
	3.1.3	Two✓/2		(1)
	3.1.4	EeSS✓		(1)
	3.1.5	eS✓ eC✓		(2)
	3.1.6	Floppy ears and smooth coat✓		(1)
	3.1.7	In order to have curly coat the puppies have to receive a C allele from each parent ✓/ C allele form both the mother and the father The male bred only has S alleles✓/ does not have a C allele		(2)
	3.1.8	eeCC✓		(1) **(10)**

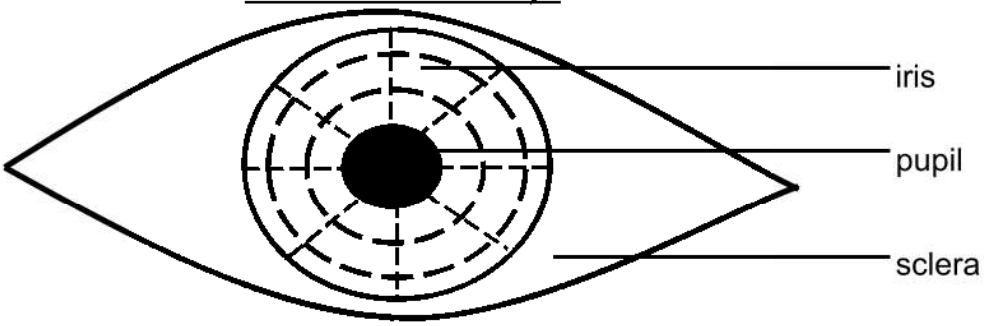
3.2	3.2.1	Biotechnology is the manipulation of biological processes to satisfy human needs.✓		(1)
	3.2.2	Gene✓ mutation		(1)
	3.2.3	- Useful ✓ - Being sensitive to bitterness in plants, made them able to identify poisonous plants✓ - Increasing their chances of survival✓/ prevent illness		(3)
	3.2.4	- So they can enjoy more variety of food✓ - So they can also access its nutrition✓ - To prevent nutrient deficiencies✓	Any	(1)
	3.2.5	Increased yield✓ Pest resistant✓ Drought resistant✓ Disease resistant✓ Longer shelf life✓ **Mark first TWO only**	Any	(2)
	3.2.6	Losing their bitterness✓ Will result in herbivores/ pests eating it✓		(2) **(10)**

3.3 3.3.1 Iris✓/radial and circular muscles (1)

3.3.2 20 – 30)✓s (1)

3.3.3 - Radial muscles contract✓
- Circular muscles relax✓
- Pupil increases in diameter✓/dilates (3)

3.3.4 **Front view of the eye**



Criteria for marking diagram

Criteria	Mark allocation
Caption **(C)**	1
Correct drawing of the front view of an eye **(D)**	1
Pupil = 6 mm **(P)**	1
Any 2 correct labels **(L)**	2

(5)
(10)

3.4 3.4.1 (a) D✓- Cerebellum✓ (2)

(b) A✓- Cerebrum✓ (2)

(c) B✓-Medulla oblongata✓ (2)

3.4.2 - Cerebrospinal fluid✓
- Vertebrae✓
- Meninges✓ Any (2)

3.4.3 - loss of sensation✓/ cannot taste, smell, feel, see or hear
-loss of higher cognitive functions✓
-cannot control voluntary actions✓ (3)

3.4.4 The medulla oblongata✓ will be affected as it is center that controls reflexes✓ (2)
(13)

3.5	3.5.1	Pancreas✓	(1)
	3.5.2	Endocrine: When secreting Insulin and Glucagon✓ It secretes hormones✓ Directly into the blood✓ Exocrine: Secreting digestive juices/enzymes✓ Via ducts✓ To target organs✓/ small intestine	(6) **(7)**

TOTAL QUESTION 3 [50]
TOTAL SECTION B: 100
GRAND TOTAL: 150

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