GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION
GRADE 12

2026

MARKING GUIDELINES

LIFE SCIENCES

14 pages

PRINCIPLES RELATING TO THE MARKING OF LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are reached and place a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark only 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 but 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 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, 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 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. Marking guidelines 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 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 to the marking guidelines**
No changes must be made to the marking guidelines without consulting the provincial internal moderator.

Additional notes to the marking of GP Life Sciences June 2026

1.1 If the learner gave more than one answer, they will get no marks e.g. 1.1.1 A/B XX

1.2 If the learner gave more than one term, they will get no marks e.g. 1.2.1 Codon/anticodon X (don't choose what to mark for the learner

1.3.2 accept Both✓✓ A and B✓✓ A, B✓✓ but not A/B XX

1.5.2 c) accept testicle/s

1.5.3 c) accept sex chromosomes

2.1.1 MUST state homologous **pair** of chromosomes. Please refer to diagnostic reports e.g Diagnostic report of 2020 pg 157 and info shared in roadshows. Homologous means they are the same size, same shape, etc. pair means they are together as in prophase 1 and metaphase 1. There is a misconception that homologous means paired. There is a question: compare Metaphase 1 vs metaphase of mitosis, if learners write there are homologous chromosomes in Metaphase and no homologous chromosomes metaphase of mitosis, they lose both marks as they are in both but pared in metaphase 1 and singly in metaphase of mitosis. Rather we correct it now to avoid issues in prelims and finals.

2.1.2 a) accept chiasmata

2.2.1 The slash option requires the entire sentence/concept with anaphase replacing meiosis.

2.2.4 a) accept sex chromosomes

2.5.1 No mark for SNS X (not an approved abbreviation)

2.5.3 Accept if zero shown on the x-axis (plotting must start at 1 on the x-axis)

2.6.4 Accept High LH levels cause an egg to be released into the fallopian tube. (NB! This label was incorrect; it should have been "egg cell". Note that ovum is the most correct response, but egg cell is also accepted, egg is generally not accepted and should not be taught, it is a concession due to the diagram.

2.7 Must draw a table and must have correct headings for the columns to get a mark for **T**.

3.1.2. Do not award a mark if only part of the DNA unwinds and is used as a template. In the diagram of DNA replication only part of the entire molecule unwinds (so we do not accept it as a difference). It's only after DNA Replication that the entire molecule would have unwinded and rewinded. See diagram of replication in mind the gap pg. 3, DBE textbook top of pg. 17, incomplete unwinding visible during the replication process.

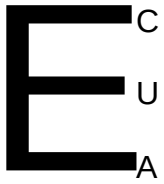
3.1.4 a) Accept point mutation (please do not teach this to learners, it is out of the scope of the exam guidelines.) Do not accept substitution as that is a description of the mutation.

c) If more than 3 nucleotides are drawn, learner loses mark for diagram (**D** x); mark the first 3 bases (**B**) if correct and ignore the rest.

Ignore the shape of the nitrogenous bases, sugar and phosphate

For nitrogenous bases, accept the letters C, U and A instead of the full names.

If a ladder shape is drawn e.g.



Mark the diagram above as follows: **C** X; **D** X; **B** ✓; **L** X

Mark each criterion separately for each case the symbols **C**; **D**; **B** & **L** must be written next to each drawing of the learner with a X or ✓.

You may NOT accept sugar/pentose sugar – it must be “ribose sugar”

3.2.2 the F1 ratio cannot be in the form of percentages as ratios must be simplified. Ensure that the correct number value is with the correct phenotype.

3.3.1 point 6 – do not accept blastocyte

accept blastula

3.3.2 accept crista (singular)

3.4.2 accept vertebrae in place of the last bullet.

3.4.3. Accept examples of those functions.

3.4.4 Please read the entire answer to ensure that the context/sequence of the answer is correct.

Bullet 5 accept **more rounded**

3.5.2 The answer MUST start with “TO” followed by a verb (determine, compare, investigate, etc.) AND all of the aspects in bold on the marking guidelines. It is 2 marks all or nothing.

3.5.4 For the first value, accept a range between 7.8 and 7.9

For the second value, accept a range between 2 and 2.1

For the final answer, accept a range between 271 and 295

SECTION A

QUESTION 1

1.1 1.1.1 A ✓✓

1.1.2 B ✓✓

1.1.3 A ✓✓

1.1.4 D ✓✓

1.1.5 A ✓✓

1.1.6 C ✓✓

1.1.7 C ✓✓

1.1.8 B ✓✓

1.1.9 B ✓✓

1.1.10 D ✓✓

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

1.2 1.2.1 Codon ✓

1.2.2 Stem cells ✓

1.2.3 Colour blindness ✓/Daltonism

1.2.4 Adrenalin ✓

1.2.5 Nucleotide ✓

1.2.6 Ovary ✓

1.2.7 Hormone(s) ✓

1.2.8 Translation ✓

(8 x 1) **(8)**

1.3 1.3.1 A only ✓✓

1.3.2 Both A and B ✓✓

1.3.3 None ✓✓

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

1.4	1.4.1	(a) Group O ✓	(1)
		(b) Group A ✓and B ✓	(2)
		(c) Group AB✓	(1)
	1.4.2	3 ✓ (If more than one answer is given, the candidate will not receive any marks.)	(1)
	1.4.3	I^Ai ✓ (If more than one answer is given, the candidate will not receive any marks.)	(1)
			(6)
1.5	1.5.1	(a) D ✓	(1)
		(b) A ✓	(1)
	1.5.2	(a) C ✓ – seminal vesicle ✓	(2)
		(b) B ✓ – Urethra ✓	(2)
		(c) A ✓ – testis✓/testes	(2)
	1.5.3	Cowper's gland ✓ and Prostate gland ✓ **(Mark first TWO only)**	(2)
			(10)

TOTAL SECTION A: 50

SECTION B

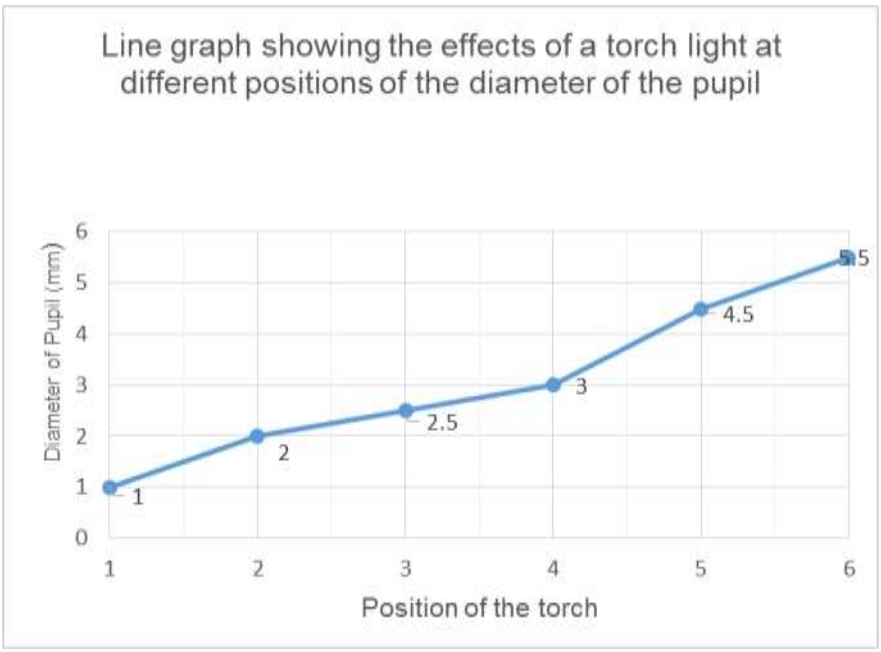
QUESTION 2

2.1	2.1.1	Homologous pair of chromosomes ✓	(1)
	2.1.2	(a) Chiasma ✓ (b) Crossing over ✓	(1) (1)
	2.1.3	A2 – EFg ✓ B2 – efg ✓	(2)
	2.1.4	DNA replication ✓	(1)
	2.1.5	Interphase ✓	(1) **(7)**
2.2	2.2.1	Failure of chromosomes/chromatids to separate during meiosis ✓✓/Anaphase	(2)
	2.2.2	Anaphase 2✓	(1)
	2.2.3	Cell B as all/most of the daughter cells/gametes are abnormal✓✓	(2)
	2.2.4	(a) Gonosomes ✓ (b) 2 ✓ (c) It would have an extra chromosome (3) at position/pair 21✓	(1) (1) (1) **(8)**
2.3	2.3.1	Dihybrid ✓	(1)
	2.3.2	GgTt ✓✓	(2)
	2.3.3	(a) Gt ✓ (b) gt ✓	(1) (1)
	2.3.4	(a) spotted body and long tail ✓ (b) Grey striped body and long tail ✓	(1) (1)
	2.3.5	3:1 ✓✓ (no mark for 1:3)	(2) **(9)**
2.4	2.4.1	Altricial ✓ development	(1)
	2.4.2	They are born: - naked ✓/Mother keeps it warm, - with eyes closed ✓ - helpless ✓/mother feeds/protects it **(Mark first TWO only)** **Any**	(2)
	2.4.3	A **high** level of parental care results in only a **few** (one or two) offspring being born at once ✓✓	(2) **(5)**

2.5 2.5.1 Sympathetic ✓ nervous system (1)

2.5.2 Same/equal distance between torch positions ✓
The same/one torch light was used ✓
Same participant for all distances ✓
(Mark first ONE only) **Any** (1)

2.5.3



Criteria assessment of the graph

CRITERIA	ELABORATION	SYMBOL	MARK
Correct type of graph	Line graph drawn	**(T)**	1
Caption	Includes both the position of the torch/distance of light AND the diameter of the pupil	**(C)**	1
Labelling	X- and Y-axis correctly labelled including units (mm) on y-axis	**(L)**	1
Scale on X and Y-axis	Correct scaling (numbers and equal spacing) on X- and Y-axis	**(S)**	1
Plotting of points	1 to 5 points plotted correctly All 6 points plotted correctly	**(P)**	1 2
	TOTAL:		**6**

- If the wrong type of graph is drawn, the candidate will only lose the marks for (**T**)
- If the y-axis scale is taken directly from the given data, (1; 2; 2.5; 3; 4.5; 5.5) then the candidate will lose marks for **S** AND **P**
- If the labels of axes are transposed/swapped, the candidate will lose marks for **L** AND **P**
- If the graph is joined to the graph origin (Zero) the candidate will lose one mark for **P** (6)

(8)

2.6 2.6.1 Menstruation ✓ (1)

2.6.2 LH ✓ (1)

2.6.3 Growth of hair around the vulva/pubic hair ✓
Development of breasts ✓
Growth of hair in the armpits ✓
The hips become wider ✓
Commencement of menstruation ✓
(Mark first TWO only) **Any** (2)

2.6.4
- The **decrease** in **progesterone**✓
- cause the **pituitary gland** ✓
- to be stimulated to secrete **more FSH**✓.
- FSH stimulates the primary **follicle** to **develop**. ✓
- The **maturing/graafian follicle secretes oestrogen**. ✓
- **High oestrogen** levels stimulate the **pituitary gland** ✓
- to **secrete LH**. ✓
- **High LH** levels **cause ovulation** to take place ✓/An ovum is released (into the fallopian tube)

Any (6)

(10)

2.7

Endocrine	**Exocrine**
Ductless ✓	Has ducts✓
Hormones released into the blood stream ✓	Secretions released directly into cavity ✓/surface/target organ

(Mark first ONE only) **Any (1 x 2) + T ✓** **(3)**

[50]

QUESTION 3

3.1 3.1.1
- Free RNA nucleotides ✓from the nucleoplasm
- join complementarily with DNA ✓/A-U,C-G
- to form an mRNA. ✓
- mRNA now has the coded message for the synthesis of insulin ✓/protein.

Any (3)

3.1.2
- Only ONE strand of DNA is a template✓
- A single stranded molecule/RNA is formed✓

(mark first One only) Any (1)

3.1.3 They are not a protein✓
There are too few amino acids✓/less than 50 amino acids

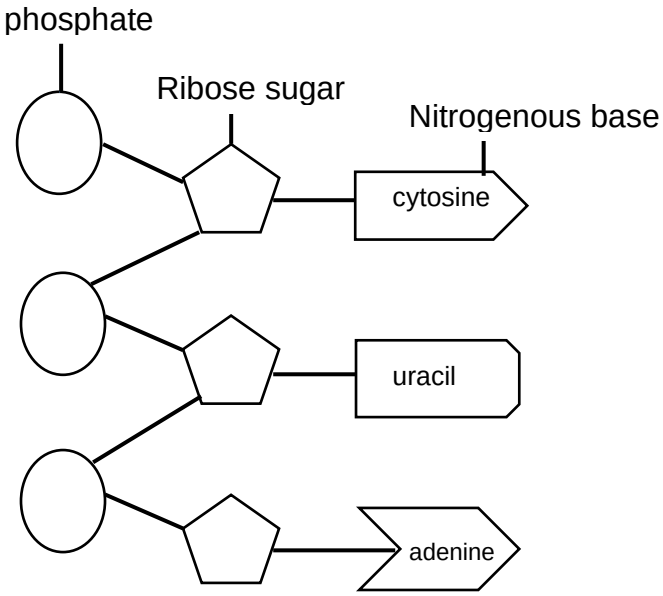
OR

They are not a protein✓
The entire mRNA molecule has not been read/translated✓ Any (2)

3.1.4 (a) Gene✓ mutation (1)

(b) Leucine ✓ (1)

(c) <u>mRNA Molecule</u>



Caption **(C)**	1 Mark
Correct drawing **(D)** 3 nucleotides with all 3 parts and all bonded correctly	1 Mark
Correct bases **(B)**	1 Mark
Labels **(L)** Ribose sugar compulsory + Phospate/nitrogenous base (exclude base names)	2 Marks
TOTAL	**5 Marks**

(5)

(13)

3.2 3.2.1 Incomplete✓ dominance (1)

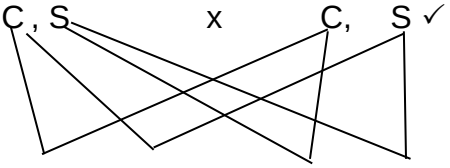
3.2.2 **P_1**

Phenotype: Wavy hair x Wavy hair ✓
Genotype CS x CS ✓

Meiosis

GIgametes C , S x C, S ✓

Fertilization



F_1 Genotype: CC CS CS SS ✓
Phenotype: Curly Wavy Wavy Straight
1Curly: 2Wavy : 1Straight ✓*

P_1 and F_1 ✓
Meiosis and Fertilisation ✓ 1 *compulsory + Any 5

OR

P_1

Phenotype: Wavy hair x Wavy hair ✓
Genotype: CS x CS ✓

Meiosis

Fertilisation

Gametes	C	S
C	CC	CS
S	CS	SS

1 mark for gametes ✓

1 mark for correct genotypes ✓

F_1

Phenotype: Curly Wavy Wavy Straight
1Curly: 2Wavy: 1Straight ✓*

P_1 and F_1 ✓
Meiosis and Fertilisation ✓ 1 * compulsory + Any 5 (6)
(7)

3.3 3.3.1 - The (diploid) zygote✓ is formed and it
- undergoes mitosis✓
- to form a solid ball of cells✓
- called the morula✓
- which eventually forms a hollow ball of cells✓
- called the blastocyst✓/blastula Which will implant in the endometrium.

Any (5)

3.3.2. Cristae✓ (1)

3.3.3 Changes in the position of the head (to gravity) will not be picked up ✓
Impulses will not be generated ✓
Impulses will not be sent to the auditory nerve ✓
The cerebellum will not be stimulated ✓
Balance will not be restored ✓*****/the child will lose balance
1*compulsory + Any 2 (3)
(9)

3.4 3.4.1 (a) D – Cerebellum ✓
(b) A – Optic nerve ✓ (2)

3.4.2 - Cerebrospinal fluid ✓
- Meninges ✓
- Vertebral column ✓/spine
(No mark for spinal cord.)
(Mark first THREE only) (3)

3.4.3 - Controls voluntary actions ✓
- Receives and interprets sensations from sense organs ✓
- Higher thought processes ✓
Any (2)

3.4.4 - Accommodation✓*****
- Ciliary muscles contract✓
- Suspensory ligaments slacken✓
- Tension on lens decreases✓
- Lens becomes more convex ✓
- Light rays are refracted/bent more✓/increased refractive power
- Light rays are focused onto the retina✓/A clear image is formed on the retina

1*compulsory + Any 5 (6)
(13)

3.5 3.5.1 Synapse ✓ (1)

3.5.2 To determine the **speed** at which **impulses** are **transmitted** along **motor neuron axons** of **increasing diameter** when the axons are **myelinated** and **unmyelinated**. ✓✓ (2)

3.5.3
- The speed of the impulse is lower ✓
- and the person will react more slowly ✓/it taking longer for impulses to reach the effectors (2)

3.5.4 $= \frac{7,9 - 2}{2}$ ✓ X 100 ✓

= 295✓% (3)
(8)
[50]

TOTAL SECTION B: 100

TOTAL: 150