Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2026

LIFE SCIENCES P1
MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 10 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 the relevant part.

4. **If comparisons are asked for but descriptions are given**
   Accept if the 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 the 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 was accepted at the provincial memo discussion meeting.

14. **If only the letter is asked for but only the name is given (and vice versa)**
    Do not credit.

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15. **If units are not given in measurements**
Candidates will lose marks. Marking guideline 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.

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SECTION A

QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	B ✓✓		
	1.1.3	D ✓✓		
	1.1.4	C ✓✓		
	1.1.5	A ✓✓		
	1.1.6	D ✓✓		
	1.1.7	B ✓✓		
	1.1.8	C ✓✓		
	1.1.9	B ✓✓	(9 x 2)	(18)
1.2	1.2.1	Urethra ✓		
	1.2.2	Neuron ✓/nerve cell		
	1.2.3	Accessory ✓		
	1.2.4	Prolactin ✓		
	1.2.5	Receptor ✓		
	1.2.6	Pupillary mechanism ✓ /reflex		
	1.2.7	Abscisic acid ✓ / ABA		
	1.2.8	Negative feedback ✓	(8 x 1)	(8)
1.3	1.3.1	B ✓✓ only		
	1.3.2	Both ✓✓ / A and B		
	1.3.3	Both ✓✓ / A and B		
	1.3.4	A ✓✓ only	(4 x 2)	(8)
1.4	1.4.1	Thermoregulation is the process by which the body maintains a constant internal body temperature ✓ within narrow limits ✓/certain boundaries/ keeping it as close to 37 ˚C as possible.		(2)
	1.4.2	(a) Hair ✓ shaft		(1)
		(b) Blood vessels ✓		(1)
	1.4.3	- Vasoconstriction ✓ is occurring/surface blood vessels constrict - Hair is standing upright, ✓ showing contraction of the erector muscle. - Sweat gland is inactive ✓ / no sweat is being produced - Blood vessels are further from the surface ✓ of the skin **(Mark first TWO)**		(2)
	1.4.4	Hypothalamus ✓		(1)
	1.4.5	- Failure of cells/tissues/organs ✓/ death - Enzyme inactivity ✓ - Hypothermia ✓ /dangerously low body temperature / Frostbite **(Mark first TWO)**		(2)

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1.5 1.5.1 Peripheral nervous system ✓ (1)

1.5.2
- Transmits impulses between CNS and the body ✓
- Detection of environmental stimuli ✓/changes in the internal and external environment
- Relays impulses to motor neurons ✓
- Coordinates and controls body responses (e.g. muscle movement and gland activity)

(Mark first TWO) (2)

1.5.3 (a) Spinal ✓ nerves (1)

(b) Ventral root ✓ (1)

1.5.4
- Paralysis of limb ✓/ loss of movement in the affected area
- Muscle weakness ✓/ shrinking / atrophy / decreased muscle tone
- Loss of reflexes ✓

(Mark first TWO) (2)

[50]

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

2.1 2.1.1 (a) Hypothalamus ✓ (1)

(b) Pituitary ✓ / Hypophysis (1)

2.1.2
- Endocrine ✓*
- Secretions/hormones are released directly into the bloodstream ✓
- No ducts ✓ are used to transport secretions (3)

2.1.3
- **The hypothalamus** contains osmoreceptors ✓
- that detect a decrease in the water level of the blood ✓
- The hypothalamus produces antidiuretic hormone (ADH) ✓ (Any 2)
- ADH is transported to and stored in **the pituitary/hypophysis gland** ✓
- The pituitary/hypophysis gland releases ADH into the bloodstream ✓ (2) (4)

2.1.4
- It helps maintain homeostasis by regulating essential body processes ✓ such as breathing and heart rate. ✓
- It controls important involuntary reflexes, ✓ such as swallowing and coughing. ✓ (2 x 2) (4)

2.2 2.2.1 (a) Effector ✓ /Muscle (1)

(b) Receptor ✓ (1)

2.2.2
- A rapid/quick, involuntary/automatic response ✓
- to a stimulus ✓ /without conscious control (2)

2.2.3
- Ensures that the impulse moves in one direction only ✓
- Prevents continuous stimulation of the neurons ✓
- Impulse is transmitted from the sensory to motor neuron ✓
- A single neuron can receive inputs from many other neurons ✓

(**Mark first TWO only**) (2)

2.2.4

Sensory neuron / F	Interneuron / C
Convert stimuli to nerve impulses	Integrate nerve impulses into coordinated responses
Transmit impulses towards the CNS	Transmit signals within the CNS / To motor neurons
Myelinated	(Mostly) Unmyelinated
(Pseudo)unipolar	Multipolar

Table (T) ✓* + ✓ per difference x 4 **(Mark first TWO)** (5)

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2.2.5 (a) Dorsal root ✓ (1)

(b) - It allows the body to detect stimuli ✓
- and send sensory impulses ✓
- to the spinal cord ✓ / CNS for a response. (Any 2 x 1) (2)

2.3 2.3.1 (a) Vestibular ✓ / Auditory nerve (1)

(b) Stapes / Stirrup ✓ (1)

2.3.2 - Region A / External auditory canal transmits sound waves ✓
- Region D / Cochlea transmits pressure waves ✓ (2)

2.3.3 - B ✓* / Utricles and saccules
- Maculae are stimulated ✓ and
- convert the stimulus to an impulse ✓ which
- is sent via the auditory nerve ✓
- to the cerebellum ✓ for interpretation
- Impulses are then sent to the skeletal muscle ✓ to restore balance

(Compulsory ✓* + Any THREE) (4)

2.3.4 - The cochlea/organ of Corti contains receptors ✓ / hair cells
- These receptors convert sound vibrations into nerve impulses ✓
- Damage means receptors cannot function properly ✓
- Fewer or no nerve impulses are sent to the brain ✓
- The person will have reduced hearing or deafness ✓ (5)

2.4 2.4.1 (a) Cornea ✓ (1)

(b) Fovea centralis ✓ / yellow spot (1)

2.4.2 - G / ciliary body/muscles relax ✓
- E / suspensory ligaments become taut ✓ / tighten
- F / lens becomes flat ✓/ less convex/ decreases in refraction power (3)

2.4.3 - It has no photoreceptors ✓/ rods and cones
so, no image ✓ can be detected there
OR
- The optic nerve enters/exits at this region ✓
so, no image ✓ can be detected there (Any 1 x 2) (2)

2.4.4 (a) B ✓ (1)

(b) - Reduced blood supply means less oxygen ✓ reaches the retina ✓ of the eye
OR
- This causes photoreceptor cells/rods and cones to function poorly or die, ✓ resulting in blurred vision ✓ (Any 1 x 2) (2)

[50]

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QUESTION 3

3.1 3.1.1 Graafian follicle ✓ /mature follicle (1)

3.1.2 Ovulation ✓ (1)

3.1.3
- Diploid cells ✓ in the ovary
- undergo mitosis ✓/form numerous follicles (2)

3.1.4 (a) No/Lack of fertilisation ✓ / A decrease in progesterone (1)

(b)
- Progesterone levels will decrease ✓
- FSH and LH are no longer inhibited ✓ /produced by the pituitary gland and the cycle begins again
- Follicles develop ✓ (Any 2) (2)

3.1.5
- High levels of oestrogen and progesterone inhibit the secretion of FSH and LH ✓/negative feedback
  This prevents the development of new follicles during this phase ✓
- Oestrogen stimulates the development of the endometrium ✓
  The endometrium becomes thicker, more vascular and glandular ✓
  (2 x 2) (4)

3.1.6
- No oestrogen and no progesterone will be secreted ✓
- No endometrium lining will develop ✓
- No ovulation ✓ will take place
- No menstruation ✓ will take place (4)

3.2 3.2.1
- Presence of claspers ✓
- Direct transfer of sperm ✓ into the female body
- Internal fertilisation ✓ occurs in the female body
- Mating behaviour ✓ /male mates directly with female) (Any 2) (2)

3.2.2
- Precocial ✓*
- new-borns are independent at birth ✓ / no parental care is provided (2)

3.2.3
- Eggs are fertilised and develop inside the female's body ✓
- Embryos are nourished by yolk (not placenta) ✓
- Eggs hatch internally and young are born live. ✓ (Any 2) (2)

3.2.4
- Provide a large amount of nutrients to the developing embryo ✓
- Resulting in a larger and well-developed pup at birth ✓ which improves survival

  OR
- Leads to the development of predatory behaviour (pre-adaptation) ✓
- As the embryo eats other eggs/embryos, it is better prepared to hunt after birth ✓ (2)

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3.3 3.3.1 (a) Amount/concentrations of NES with T ✓ (1)

(b)
- Gender ✓
- Age range of participants ✓
- Frequency of application of NES/T after a shower in the evening ✓/ Once a day application ✓
- Every 6 weeks semen samples were taken ✓
- 24-week duration of investigation ✓
- The use of metered canisters for gel amount ✓

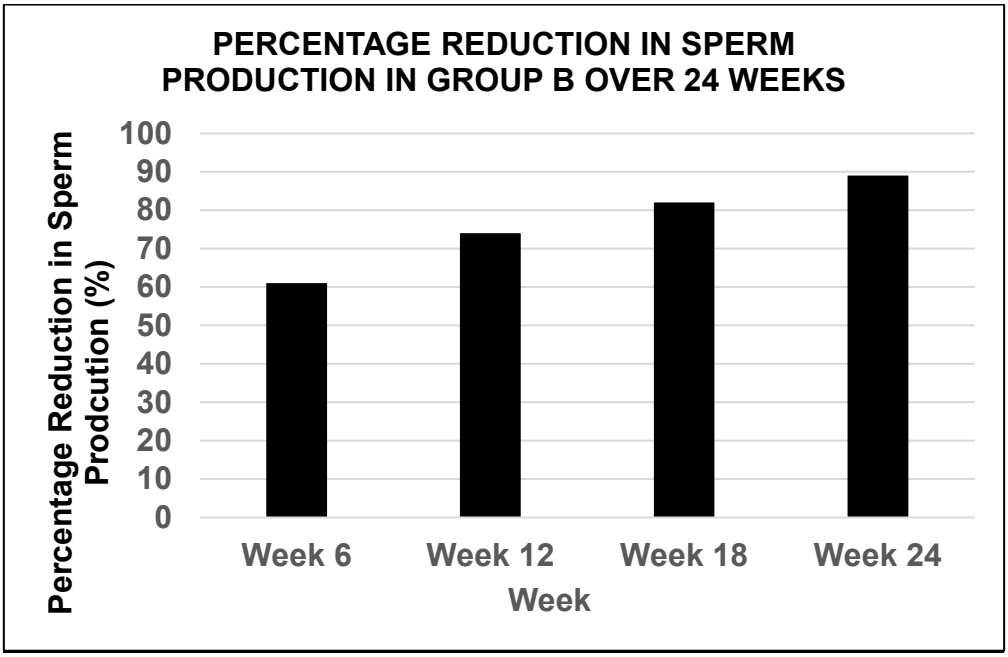
(Mark first ONE only) (1)

(c) Average sperm per cm^3 ✓ (1)

3.3.2
- Serves as a control ✓ group
- To show that varied concentrations of NES/T decrease male fertility and no other variable / factor ✓ (2)

3.3.3
- Maintains normal male characteristics ✓ (eg. Libido, muscle mass)
- Does not affect any male secondary sexual characteristics ✓ / Prevents side-effects ✓ of low testosterone levels (2)

3.3.4



Criteria	Key	Mark allocation
Type of graph – Bar graph is drawn	**T**	1
Caption – Includes both variables	**C**	1
Labels – for x-axis and y-axis and correct unit for y-axis	**L**	1
Equal space and width of bars for x-axis and correct scale for y-axis	**S**	1
Plotting – 1–3 coordinates are plotted correctly All 4 co-ordinates are plotted correctly	**P**	 1 2

(6)

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If a histogram or line graph is drawn, marks will be lost for:
- Type of graph
- Scale

If axes are transposed:
- Can get all marks if labels are also swopped and bars are horizontal
- If labels are not corresponding, then:
  - Marks will be lost for labels and scale
  - Plotting can get credit if coordinates are correct for given labels

3.3.5 - NES/T does not decrease chance of fertilisation by 100% ✓/not completely effective
- Some sperm cells could still be formed and fertilise an ovum ✓ / fertility not completely suppressed. (2)

3.4 3.4.1 - Directional growth response ✓ of a plant
- In response to an environmental stimulus ✓ (eg. light, gravity) (2)

3.4.2 (a) 6 – 8 ✓ ppm ✓ (2)

(b) - (Due to higher auxin) cells on the shaded side will elongate ✓
- Causing the plant stem to bend towards the light ✓ (2)

3.4.3 - Shoots / stems cells will be stimulated by low auxin ✓ concentrations to elongate ✓
- Root cells will be inhibited by high auxin concentrations ✓ and will not elongate ✓ (4)

3.4.4 - High auxin concentration causes uncontrolled growth ✓
- Leading to higher metabolism that is unsustainable to support plant growth ✓
- Causing weed(s) to die ✓

(Any TWO) (2)

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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