Northern Cape Department of Education

PROVINCIAL PREPARATORY EXAMINATION

GRADE 12

LIFE SCIENCES

PAPER 1

SEPTEMBER 2026

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 12 pages.

Copyright reserved

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when the maximum mark 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 the 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 the 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.

Copyright reserved

13. **If common names are given in terminology**
Accept, provided it was accepted at the national 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. The memorandum will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated differently.**

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 learner's 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 applies to all official languages.

19. **Changes to the memorandum**
No changes must be made to the memoranda without the approval of the examiner and moderator.

Copyright reserved

SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	A✓✓		
	1.1.3	C✓✓		
	1.1.4	D✓✓		
	1.1.5	A✓✓		
	1.1.6	A✓✓		
	1.1.7	D✓✓		
	1.1.8	A✓✓		
	1.1.9	B✓✓		
	1.1.10	C✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Blastocyst✓/Blastula		
	1.2.2	Tropism✓		
	1.2.3	Amniotic✓ fluid		
	1.2.4	Vasodilation✓/vascular dilation		
	1.2.5	Apical dominance✓		
	1.2.6	Cervix✓		
	1.2.7	Hypothalamus✓		
	1.2.8	Abscisic acid✓		
	1.2.9	Peripheral✓ nervous system	(9 x 1)	**(9)**
1.3	1.3.1	Both A and B✓✓		
	1.3.2	A only✓✓		
	1.3.3	B only✓✓	(3 x 2)	**(6)**

Copyright reserved

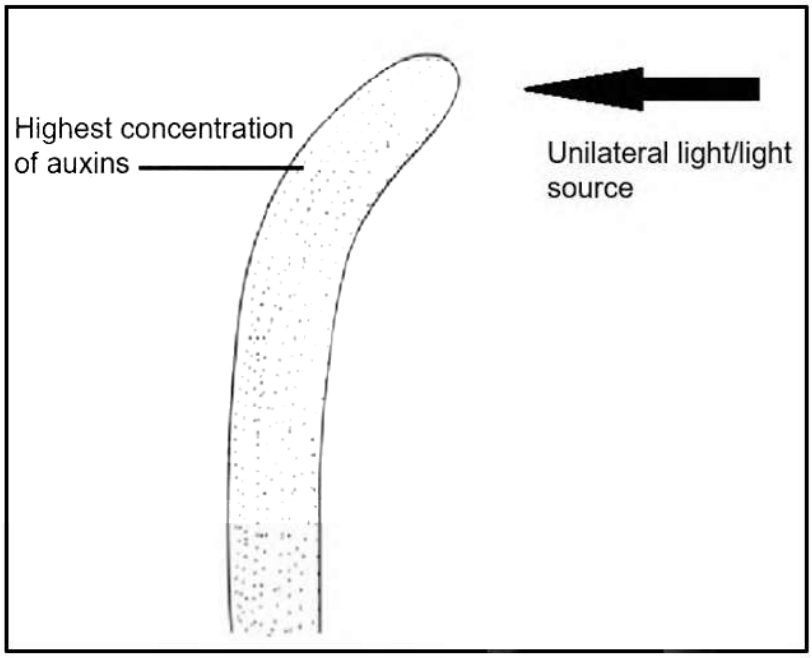
1.4	1.4.1	(a) D✓ -Yolk✓ sac			(2)
		(b) C✓ -Allantois✓			(2)
		(c) A✓ -Chorion✓			(2)
		(d) B✓ -Amnion✓			(2)
					(8)
1.5	1.5.1	Spinal cord✓			(1)
	1.5.2	Ventral root✓ of spinal nerve			(1)
	1.5.3	- Meninges✓ - Vertebrae✓/vertebral column/bone - Cerebrospinal fluid✓ **(Mark first ONE only)**		Any	(1)
	1.5.4	- Sensory✓ neuron - Inter✓ neuron/connector neuron - Motor✓ neuron	(Correct order✓)		(4)
					(7)
			TOTAL SECTION A:		**50**

Copyright reserved

SECTION B

QUESTION 2

2.1



Criteria for marking the diagram:

Criteria	Mark allocation
Plant stem growing towards light **(D)**	1
Light source/arrow included in diagram **(L)**	1
Hormone: Correct area with the highest concentration of hormone **(HA)** Correct name of hormone **(HN)**	 1 1

(4)

PLEASE NOTE THAT THE LIGHT SOURCE CAN COME FROM THE LEFT.

2.2 2.2.1 (a) Uterus✓ (1)
(b) Vagina✓/Birth canal (1)

2.2.2 (a) A✓ -Fallopian tube✓ (2)
(b) E✓ -Endometrium✓ (2)

2.2.3 (a) Oestrogen✓ (1)
(b) Progesterone✓ (1)
(c) -The (periodic) shedding of the endometrium/thickened lining of the uterus✓ (and blood vessels)
- through the vagina✓
(2)

OR

-The endometrium will thicken✓
-due to secretion of oestrogen✓

Copyright reserved

(d) Woman **2✓/2** (1)

(e) -The progesterone✓/hormone **II** levels of woman **2**
-is high/keeps increasing towards day 28✓/Day **R** (2)

2.2.4 (a) FSH✓/follicle stimulating hormone
LH✓/luteinising hormone (2)
*(NOTE: Give credit for **Oxytocin** although not required by the Examination Guidelines)*

(b) - Lower levels of FSH✓
- will inhibit the development of a Graafian follicle✓
- Lower levels of LH✓
- will inhibit/prevent ovulation and✓
- the formation of the corpus luteum✓ Any
(NOTE: If candidates answer Oxytocin in Q.2.2.4(a), credit if the affected function is correct) (4)

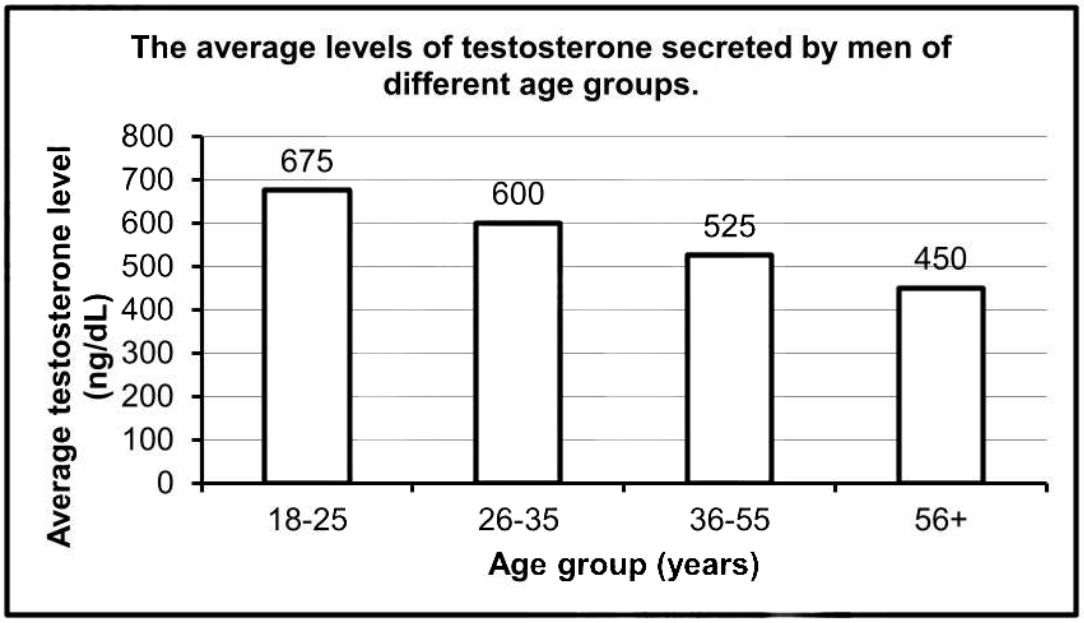
(19)

2.3 2.3.1 Testes✓/testicles (1)

2.3.2 - Development of the male secondary sexual characteristics✓/example
- Stimulates spermatogenesis✓/the formation/maturation of sperm cells
(Mark first TWO only) (2)

Copyright reserved

2.3.3



Criteria for marking the graph:

Criteria	Mark allocation
Type of graph: Bar graph is drawn (**T**)	1
Caption of the graph includes both variables (**C**)	1
Correct labels for X-axis and Y-axis and correct units for X-axis and Y-axis (**L**)	1
Equal space and width of bars for X-axis and correct scale for Y-axis (**S**)	1
Plotting: (**P**) 1 – 3 co-ordinates are plotted correctly All 4 co-ordinates are plotted correctly	 1 2

(6)

PLEASE NOTE:

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 co-ordinates are correct for given labels

Copyright reserved

2.3.4 Men from younger age groups have higher testosterone levels✓✓ than men of older age groups.

OR

Men from older age groups have lower testosterone levels✓✓ than men of younger age groups (2)

(11)

2.4 2.4.1 The maintenance of a constant, internal environment✓ (within narrow limits), despite changes that take place internally and externally✓ (2)

2.4.2 Pancreas✓ (1)

2.4.3
- High blood sugar✓
- Extreme first✓
- Rapid and deep breathing✓
- Frequent urination✓
- Nausea✓
- Coma✓
- Death ✓

Any (2)

(Mark first TWO only)

2.4.4
- The acidic build up✓/ketones
- stimulates the medulla oblongata✓
- which stimulates rapid and deep breathing to **remove more** carbon dioxide✓/CO_2
- making the blood **less** acidic✓/increase the pH

Any (3)

2.4.5
- The pancreas is stimulated to secrete **more** insulin✓
- which stimulates the absorption of glucose from the blood✓/into the cells and the
- conversion of glucose to glycogen in the liver and muscles✓
- Glucose levels decrease✓/ return to normal

Any (3)

2.4.6
- They drink a lot of water due to extreme thirst✓
- High levels of water in the blood are detected by the hypothalamus✓ and the
- the pituitary secretes **less (no)** ADH✓/antidiuretic hormone
- Renal tubules (collecting ducts and distal convoluted tubules in the kidney) become **less** permeable✓
- **Less** water is reabsorbed into the blood✓ and frequent urination takes place.

(5)

(16)

[50]

QUESTION 3

3.1 3.1.1 (a) Cerebrum✓ (1)

(b) Medulla oblongata✓ (1)

3.1.2 (a) - Conduct impulses between the two hemispheres✓ /connects the two hemispheres of the cerebrum
- for communication✓ between the two hemispheres (2)

(b) - It coordinates voluntary movement✓ to
- ensure that different muscle groups work together✓/ make smooth movement possible

OR

- It controls muscle tone✓ to
- to maintain balance and posture✓ Any (1 x 2)

(Mark first ONE only) (2)

3.1.3 Alzheimer's✓ disease (1)

(7)

3.2

T ✓

SYMPATHETIC NERVOUS SYSTEM	PARASYMPATHETIC NERVOUS SYSTEM
Increases heart rate✓	Decreases heart rate✓
Constricts blood vessels in the skin✓/vasoconstriction	Dilates blood vessels in the skin✓/vasodilation
Increases blood pressure✓	Decreases blood pressure✓
Widens bronchioles✓	Narrows bronchioles✓
Decreases peristalsis✓	Increases peristalsis✓
Causes relaxation of the bladder wall✓	Causes contraction of the bladder wall✓
Stimulates sweat secretion✓	Does not stimulate sweat secretion✓
Dilates pupils✓	Constricts pupils✓
Stimulates secretion of adrenalin✓/During stressful conditions/fight or flight	Does not stimulate secretion of adrenalin✓/during calm conditions
Increases breathing rate✓	Decreases breathing rate✓
Increases blood flow to skeletal muscles✓/ supply of glucose	Decreases blood flow to skeletal muscles✓/supply of glucose
Increases metabolic rate✓	Decreases metabolic rate✓

(Mark first TWO only) Table (1) plus any (2 x 2) **(5)**

Copyright reserved

3.3 3.3.1 Motor✓ neuron (1)

3.3.2 (a) B✓ – Dendrite✓ (2)
(b) A✓ – Axon✓ (2)

3.3.3 - The presence of a myelin sheath✓ to insulate the axon✓/allow conduction of impulses
- A long axon✓ to transmit impulses over long distances✓ Any (1 x 2) (2)
(Mark first ONE only)

3.3.4 Synapse✓ (1)

3.3.5 - It ensures that the impulse moves in one direction only✓
- It prevents continuous stimulation of the neurons✓
- It ensures that the impulse is transmitted from the sensory neuron to the motor neuron✓/from one neuron to the next (2)
Any

(10)

3.4 3.4.1 (a) Cornea✓ (1)
(b) Suspensory ligaments✓ (1)
(c) Sclera✓ (1)

3.4.2 (Diagram) **I**✓ (1)

3.4.3 Concave✓/biconcave/divergent/minus (1)

3.4.4 **LONG-SIGHTEDNESS (DIAGRAM I):**
- A person can **see** distant objects but is unable to see nearby objects✓ clearly
- An **eyeball** that is too short✓ (rounded)/ the cornea not being curved enough for the length of the eyeball/ the inability of the lens to become more convex
- the **light rays** focus behind the retina✓/image falls behind retina

SHORT-SIGHTEDNESS (DIAGRAM II):
- A person can **see** nearby objects but cannot see distant objects✓ clearly
- An **eyeball** that is too long✓/ the cornea being too curved for the length of the eyeball/ the inability of the lens to become less convex
- the **light rays** focus in front of the retina✓/image falls in front of retina (6)

DO NOT PENALISE IF ANSWER IS IN THE FORM OF A TABLE OR COMPARED PER DIFFERENCE.

(11)

Copyright reserved

3.5 - The pinna traps and directs sound waves into the auditory canal✓ towards the tympanic membrane
- The tympanic membrane vibrates✓ and
- causes the ossicles to vibrate✓
- The ossicles (hammer, anvil and stirrup) amplify and transmit the vibrations to the oval window✓
- The vibrating oval window causes pressure waves in the cochlea✓
- The organ of Corti/ hair cells is stimulated✓ and
- the stimulus is converted into a nerve impulse✓
- which is transmitted to the auditory nerve✓
- The auditory nerve transmits the impulse to the cerebrum✓ for interpretation Any **(7)**

3.6 3.6.1 On top of the kidneys✓ (1)

3.6.2 Aldosterone✓
Adrenalin✓ (2)
(Mark first TWO only)

3.6.3 (Resting blood glucose concentration)✓ (1)

3.6.4 To act as a control✓ for the investigation/to determine if glucose levels will be normal with normal cortisol levels (1)

3.6.5 - Each group had 5 participants✓
- All participants fasted for 8 hours✓
- The same machine was used to measure glucose✓ (2)
Any
(Mark first TWO only)

3.6.6 The averages were calculated✓ (1)
(Mark first ONE only)

3.6.7 - Using more than 5 participants per group✓
- Repeat the investigation✓
(Mark first TWO only) (2)
(10)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

Copyright reserved