



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

**LIFE SCIENCES
PRE-TRIAL
14 AUGUST 2026
MEMORANDUM**

MARKS: 150

TIME: 2½ Hours

This Memorandum consists of 12 pages including the cover page

MEMORANDUM**PRINCIPLES RELATED TO MARKING LIFE SCIENCES**

1. If more information than marks allocated is given Stop marking when maximum marks are 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 are incorrect, do not credit. If sequence and links become 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: only accept if provided as an alternative in the marking guideline.
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, drawings, 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 answer should be credited, if it is correct.
19. No changes must be made to the marking memoranda without consulting the District Curriculum Advisors.

NSC

SECTION A

QUESTION 1

1.1

1.1.1 B✓✓

1.1.2 D✓✓

1.1.3 C✓✓

1.1.4 A✓✓

1.1.5 D✓✓

1.1.6 C✓✓

1.1.7 A✓✓

1.1.8 D✓✓

1.1.9 B✓✓

1.1.10 C✓✓

(10 x 2) (20)

NSC

1.2

- 1.2.1 Hormones ✓
- 1.2.2 Alzheimer's disease ✓
- 1.2.3 Prolactin ✓
- 1.2.4 Precocial ✓
- 1.2.5 Umbilical vein ✓
- 1.2.6 Parasympathetic ✓
- 1.2.7 Amniotic ✓ fluid
- 1.2.8 Eustachian tube ✓
- 1.2.9 Corpus callosum ✓
- 1.2.10 Acrosome ✓

(10 x 1) **(10)**

1.3

- 1.3.1 Both A and B ✓✓
- 1.3.2 B only ✓✓
- 1.3.3 A only ✓✓

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

1.4

- 1.4.1 (a) C ✓ – cerebellum ✓ (2)
- (b) G ✓ – cerebrum ✓ (2)
- 1.4.2 D- spinal cord ✓ and H – corpus callosum ✓ (2)
- 1.4.3 controls breathing, peristalsis, heart beat and swallowing ✓
- transmits impulses from the spinal cord to the brain ✓ **(Any 1)** (1)

(7)

NSC

1.5

- 1.5.1 B – urethra ✓ C – testes ✓ (2)
- 1.5.2 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 ✓ (Any 2) (2)
- 1.5.3 Protects the sperm cell from the acidic environment of the vagina ✓ / provides a
fluid medium in which sperm cells can swim / increases mobility of sperm (1)
- 1.5.4 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 and so that
healthy sperm can survive. ✓

(7)

QUESTION 1: 50**SECTION A: 50**

NSC

SECTION B

QUESTION 2

2.1

2.1.1 A reflex action is a rapid ✓, automatic response ✓ to a stimulus. (2)

2.1.2 (a) B✓

(b) A✓

(2)

2.1.3

- It ensures that the impulse moves in one direction only ✓
- It prevents continuous stimulation of neurons ✓
- It ensures that the impulse is transmitted from the sensory neuron to the motor neuron. ✓

(Any 2) (2)

2.1.4 The spinal cord shortens the reaction time by sending impulses directly to the effector. ✓

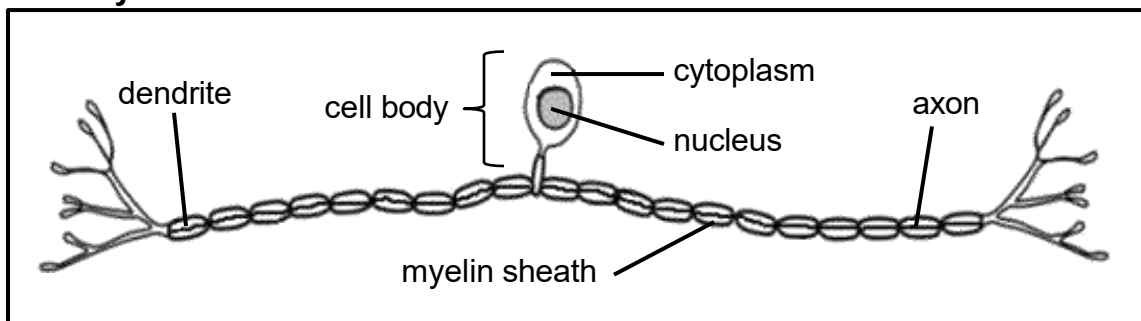
The brain delays the reaction as impulses must travel further, ✓ which could cause injury or even death. ✓

Any 2

(2)

(8)

2.2 Sensory neuron



Guidelines for marking:

Criteria	Mark allocation
Caption	✓
Correct diagram	✓
Any Four labels	4 × ✓

(6)

NSC

2.3

- 2.3.1 (a) For family planning ✓ (2)
 To know when they can get pregnant ✓
- (b) (3)
- LH ✓ / FSH / oestrogen
 - There is a rise in levels ✓ of LH / FSH / oestrogen around the time of ovulation ✓
- 2.3.2
- The zygote ✓
 - undergoes mitosis ✓
 - until a ball of cells is formed ✓
 - called a morula. ✓
 - The morula continues to divide and forms a mass of cells with a hollow cavity ✓
 - called a blastocyst ✓
 - the outer membrane of the blastocyst forms chorionic villi / attachment villi ✓
 - which attaches to the endometrium ✓ (Any 6 × 1) (6)
- (11)**

2.4

- 2.4.1 The cornea is transparent to allow light to enter ✓ and it is curved to allow for refraction of light ✓. (2)
- 2.4.2 E – contains rods and cones which are the receptors sensitive to light. These allow for an image to form ✓.
- G – pigments absorb excess light to prevent reflection ✓; blood vessels supply oxygen and nutrients ✓ (3)
- 2.4.3 C – pupil ✓
- H – suspensory ligaments ✓ (2)
- 2.4.4 (a) F ✓
- (b) A ✓
- (c) D ✓ (3)
- 2.4.5 • pupillary mechanism ✓

NSC

- the circular muscles of the iris contract ✓
- the radial muscles of the iris relax ✓
- the pupil constricts ✓
- the amount of light entering the eye is reduced ✓ (5)

(15)

2.5

2.5.1 $200 - 80 \checkmark = 120 \text{ mg/dL } \checkmark$ (2)

2.5.2 The pancreas started secreting insulin ✓ and glucose was converted to glycogen ✓ (2)

2.5.3 A diet with reduced sugar ✓.
Exercise frequently ✓.
Small meals taken frequently ✓. (3)

(7)

2.6

2.6.1 Average volume on hot day = $(430+350+270+560+400+390) / 6 \checkmark$ (2)
 $= 400 \checkmark$

2.6.2 600 cm³ more urine is produced on a cold day ✓ (1)

(3)**(10)****QUESTION 2: 50**

NSC

QUESTION 3

3.1

- 3.1.1
- The endocrine disrupter ✓ / malfunctioning of endocrine glands
 - Life style ✓ / life style variations / driving a vehicle for a prolonged period of time (any 2) (2)
- 3.1.2
- Long distance drive extends the period sitting in a fixed position ✓ causing male reproductive organ to remain tightly squeezed between the thighs for a considerable period of time ✓
 - As the temperature rises ✓ in the area, the scrotum is unable to pull the testis away from the body due to lack of spacing ✓
 - Hence, the testes remain in contact with the body ✓ and maintain a higher temperature causing a disruption in spermatogenesis. ✓ (6)

(8)

3.2

- 3.2.1 Tropism ✓ (1)
- 3.2.2 Auxins ✓ (1)
- 3.2.3
- Brings about bending reaction in plants known as tropism ✓
 - Promote cell division ✓
 - Responsible for cell elongation ✓
 - Responsible for apical dominance ✓
 - Promote root development ✓
- (any 2 ; mark first 2 only) (2)
- 3.2.4
- It promotes cell elongation ✓ at the growing tip of the stem (1)

NSC

- 3.2.5
- Under the influence of gravity ✓ the auxins tend to accumulate on the lower side of the root ✓
 - The growth on the lower side is inhibited ✓ by the increased concentration ✓ of auxins
 - On the upper side of the root the auxin concentration is less, ✓ these cells therefore elongate more ✓ causing
 - The root to bend and grow downwards. ✓

(any 6)

(6)

(11)

3.3

- 3.3.1 C-Umbilical cord ✓

(1)

- 3.3.2
- The foetus will receive less nutrients ✓
 - and therefore, have a lower birth mass ✓ / physical under- development / mental under-development

or

- The foetus will receive less oxygen ✓
- and therefore, have a lower birth mass ✓ / physical under- development / mental under-development

or

- Waste will accumulate ✓
- And it will affect the functioning of the foetus ✓

(Mark first One only; any 1 × 2)

(2)

- 3.3.3
- Protects the foetus from shock ✓ / Acts as a shock absorber
 - Protects the foetus from drying out ✓
 - Protects the foetus from temperature changes ✓
 - Allows free movement of the foetus ✓

(4)

- 3.3.4
- Gaseous exchange system ✓
 - Excretory system ✓
 - Digestive system ✓

Any 2

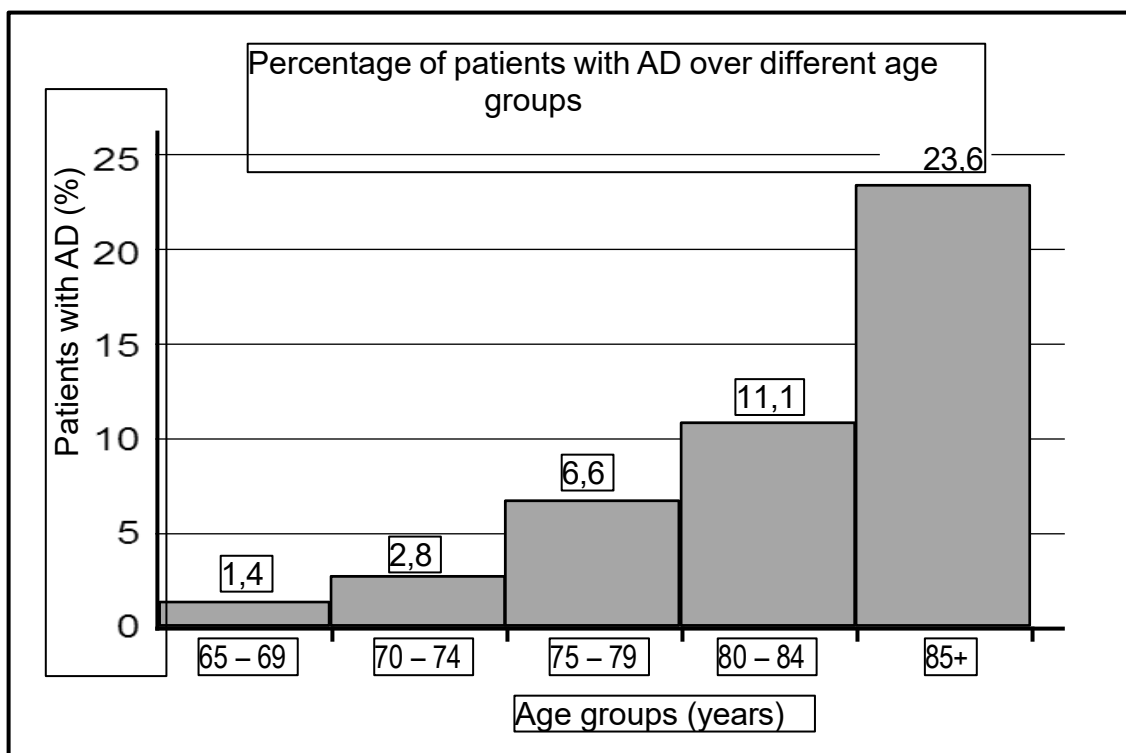
(2)

(9)

NSC

3.4

- 3.4.1 Memory loss ✓ (1)
- 3.4.2 It had abnormal clumps ✓ and tangled nerve fibres ✓ (2)
- 3.4.3 $(23,6 - 11,1) / 11,1 \times 100 = 112,6\%$ ✓ (3)
- 3.4.4 Organ failure ✓ (1)
- 3.4.5 (6)



Guidelines for assessing graph

Correct type	✓
Title of graph	✓
Correct label of x- and y-axes	✓
Correct scale of x- and y-axes	✓
Plotting of points	✓ for plotting 1 to 3 bars ✓✓ for plotting all 5 bars correctly

(13)

NSC

3.5

- 3.5.1 On top of each kidney ✓ (1)
- 3.5.2
- Less blood flow to the gut ✓, as it is not involved in responding to the emergency ✓.
 - Blood flow is redirected to organs involved in responding to the emergency ✓ such as: skeletal muscles to improve muscle tone ✓ or heart muscle,
 - for the heart to beat faster so as to increase the transport of oxygen and glucose needed for increased respiration ✓. (4)
- 3.5.3
- The pupil dilates ✓
 - to allow more light to enter the eye ✓
 - for clear vision ✓
 - during the emergency situation. ✓

(4)

(9)

QUESTION 3: 50

SECTION B: 100

GRANDTOTAL: 150