



Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isobu leMundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensio Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2024

LIFE SCIENCES P1 MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 10 pages.

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 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 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.

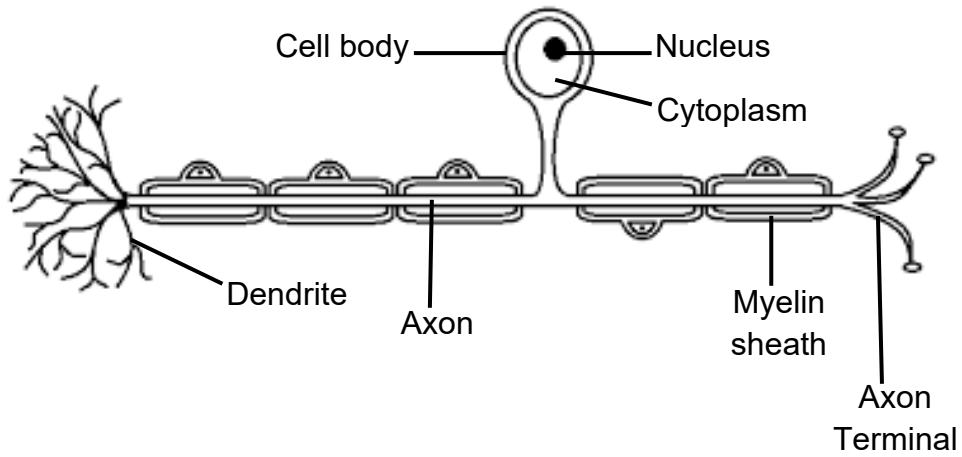
15. **If units are not given in measurements**
Candidates will lose marks. Marking guideline will allocate marks for units separately.
16. **Be sensitive to the sense of an answer, which may be stated in a different way.**
17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a 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.

SECTION A

QUESTION 1

- | | | | | |
|-----|-------|---|-------------|------|
| 1.1 | 1.1.1 | A ✓✓ | | |
| | 1.1.2 | B ✓✓ | | |
| | 1.1.3 | C ✓✓ | | |
| | 1.1.4 | A ✓✓ | | |
| | 1.1.5 | C ✓✓ | | |
| | 1.1.6 | B ✓✓ | | |
| | 1.1.7 | D ✓✓ | | |
| | 1.1.8 | A ✓✓ | | |
| | 1.1.9 | C ✓✓ | (9 x 2) | (18) |
| 1.2 | 1.2.1 | Receptor ✓ | | |
| | 1.2.2 | Chorion ✓ | | |
| | 1.2.3 | Effector ✓ | | |
| | 1.2.4 | Vasodilation ✓ | | |
| | 1.2.5 | Concave ✓ | | |
| | 1.2.6 | Mammary ✓ | | |
| | 1.2.7 | Retina ✓ | | |
| | 1.2.8 | Hypothalamus ✓ | | |
| | 1.2.9 | Synapse ✓ / synaptic cleft | (9 x 1) | (9) |
| 1.3 | 1.3.1 | A only ✓✓ | | |
| | 1.3.2 | None ✓✓ | | |
| | 1.3.3 | Both A and B ✓✓ | | |
| | 1.3.4 | A only ✓✓ | (4 x 2) | (8) |
| | 1.4.1 | (a) D ✓ – Cerebellum ✓ | | (2) |
| | | (b) A ✓ – Cerebrum ✓ | | (2) |
| | | (c) B ✓ – Medulla Oblongata ✓ | | (2) |
| | 1.4.2 | - Vertebrae ✓
Prevent mechanical injury ✓ | | |
| | | - Cerebral spinal fluid ✓
Cushioning the spinal cord acting as a shock absorber ✓/
prevent friction | | |
| | | - Meninges ✓
Membranes hold the spinal cord in place ✓/ produce cerebral
spinal fluid | | |
| | | (Mark first TWO only) | (Any 2 x 2) | (4) |

1.5 Diagram of sensory neuron



Marking guideline:

- ✓ (T) Suitable title
- ✓✓✓ (L) Labels (Any 3)
- ✓ (D) Correct drawing (sensory neuron) (5)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 $\frac{10}{100} \checkmark \times 84\ 000 \checkmark = 8\ 400$ babies \checkmark (3)

2.1.2 (a) - Thick plastic bag \checkmark
Encloses (protects) the developing foetus until delivery \checkmark
(Mark first ONE only) (2)

(b) - Oxygenator \checkmark
Allows for gaseous exchange \checkmark

OR

- Intravenous bag \checkmark
Provides nutrients \checkmark
(Mark first ONE only) (Any 1 x 2) (2)

2.1.3 - The developing foetus (organs) is allowed to continue developing/ \checkmark
Giving the organs sufficient time
- its normal development \checkmark / to develop fully/ for optimal development
- Scientists can determine when the gestation period is over \checkmark /when
to deliver the baby (3)

2.1.4 - Human foetuses could possibly be lost / destroyed \checkmark
- Acquiring consent from regulatory bodies \checkmark /parents
- Fully informing donor parent(s) about the risks \checkmark
- Contrary to religious observances \checkmark
(Mark first TWO only) (Any 2 x 1) (2)

2.2 2.2.1 Internal \checkmark fertilisation (1)

2.2.2 The male releases semen inside of the female's body \checkmark (1)

2.2.3 Vivipary \checkmark (1)

2.2.4 - The baby kangaroo is able to develop within its mother's pouch for an
extended period of time \checkmark / till 235 days
- This gives greater protection \checkmark against environmental threats (accept
examples of threats)

OR

- The baby kangaroo latches onto a teat \checkmark of the mother
- Providing nutrition \checkmark
(Mark first ONE only) (Any 1 x 2) (2)

2.2.5 Baby kangaroo is ...
- blind \checkmark
- naked \checkmark
- relies on parent for nutrition \checkmark (Any 2 x 1) (2)

- 2.3 2.3.1 (a) Vitreous humour ✓* / chamber
 - Contains nutrients for the inner eye ✓
 - Maintains eyeball shape ✓
 - Transparent to allow for transmission of light to retina ✓
 (✓* compulsory + ✓ function) (2)
- (b) Cornea ✓*
 - Refraction of light ✓
 - Protection ✓ of the eye
 - Allows light to enter the eye ✓
 (✓* compulsory + ✓ function) (2)
- 2.3.2 - Light entering the eye will not be effectively regulated ✓ /controlled
 - Too much light / too little could enter the eye ✓
 - Distorting images that fall on the retina ✓ /causing blurred vision (3)
- 2.3.3 - Ciliary muscles contract ✓
 - Suspensory ligaments slacken ✓
 - Tension on the lens decreases ✓
 - Lens becomes more convex ✓ / bulged
 - Refractive power of lens will increase ✓/ light rays are refracted more
 (a clear image is focused on the retina) (5)
- 2.4 2.4.1 (a) D ✓ – Oval window ✓ (2)
- (b) B ✓ – Cochlea ✓ (2)
- 2.4.2 - Change in speed/ direction of head ✓
 - Stimulates the cristae ✓
 - Stimulus is converted to an impulse ✓
 - Impulse is transmitted to the cerebellum ✓
 - Via the auditory nerve ✓
 - The cerebellum sends impulses to voluntary / skeletal muscles ✓ to maintain balance (Any 4 x 1) (4)
- 2.4.3 - Long coiled structure ✓
 Increased surface area to detect pressure vibrations of endolymph /✓ enhances the ability to detect low frequency sound

OR

- Presence of mechanoreceptors / organ of Corti ✓
 To convert pressure vibrations into a nerve impulse ✓

OR

- Contains fluid ✓/perilymph and endolymph
 Medium through which pressure vibrations are generated and moves through ✓ (Any 1 x 2) (2)

- 2.5 2.5.1 Geotropism ✓ (1)
- 2.5.2 Due to rotation of clinostat
- Gravity will be even on all sides ✓ / there will be no effect of gravity
 - Auxins will be evenly distributed ✓ in the root tip
 - Causing even cell elongation ✓ /growth
 - Causing the root to grow horizontal ✓ /not to bend (Any 3 x 1) (3)
- 2.5.3
- Auxin moves to the dark/shaded side ✓ of the stem
 - High concentration of auxin stimulates growth ✓
 - Leading to increased cell growth/elongation ✓ on that side
 - The stem bends towards the light ✓ (Any 3 x 1) (3)
- 2.5.4
- Mechanical ✓ /thorns
 - Chemical ✓ (2)
- [50]**

QUESTION 3

- 3.1 3.1.1 - 20 rats were placed into each group ✓
To ensure a large sampling size ✓

OR

- Testing done 3 time over 90 days ✓
So experiment was repeated ✓

OR

- Blood serum samples were harvested at random ✓
In order to obtain an average ✓

(Mark the first ONE)

(Any 1 x 2) (2)

- 3.1.2 - By using rats of the same reproductive ages ✓
- Giving the rats the same amount of water ✓

(Mark the first ONE)

(Any 1 x 1) (1)

- 3.1.3 - Testosterone level ✓ /amount of testosterone

(1)

- 3.1.4 - It is the control / To allow us to compare results ✓

- To show the decrease in testosterone ✓

- Is due to microplastics ✓

- And not the water ✓

(Any 3 x 1) (3)

- 3.1.5 As microplastics accumulate in an organism's body (rats), fertility rates will drop ✓✓

OR

Fewer microplastics within an organism's body (rat) will cause a higher fertility rate ✓✓

(2)

- 3.1.6 - Under the influence of testosterone ✓
- diploid cells in the seminiferous tubules ✓ of the testes
- undergo meiosis ✓
- to form haploid sperm cells ✓

(4)

- 3.1.7 - Low testosterone levels ✓ would result in a

- decrease in spermatogenesis ✓/less sperm will be formed/mature

(2)

- 3.2 3.2.1 (a) Adrenal glands ✓

(1)

- (b) Pancreas ✓

(1)

- 3.2.2 To maintain level of thyroxin ✓ within narrow limits ✓ in the body

(2)

- 3.2.3 Exocrine

- due to its secretion ✓/pancreatic juice

- into a duct ✓

Endocrine

- secretion of hormone ✓/glucagon/insulin

- directly into the blood ✓

(4)

- 3.2.4 - Gland C secretes the hormone adrenalin ✓
 - increases conversion of glycogen to glucose ✓
 - increase in blood glucose levels ✓
 - increase in breathing rate ✓
 - more oxygen diffuses into blood stream ✓
 - increases heart rate ✓
 - dilates blood vessels to skeletal muscles ✓
 - more blood reaches skeletal muscles ✓ (Any 5 x 1) (5)
- 3.2.5 (a) pituitary gland ✓ / hypophysis / Part A (1)
 (b) Acromegaly ✓ (1)
- 3.3.1 (a) Ovaries ✓/ graafian follicle /developing follicle (1)
 (b) Corpus luteum ✓ (1)
- 3.3.2 - Day 14 ✓ (1)
- 3.3.3 - LH levels had spiked ✓/peaked (1)
- 3.3.4 - Implantation/ fertilisation has occurred ✓
 - The corpus luteum does not degenerate ✓ /continues to produce progesterone (2)
- 3.3.5 - High levels of progesterone ✓
 - Will inhibit the pituitary gland ✓
 - From secreting FSH ✓
 - No follicles will be stimulated to develop ✓ (4)
- 3.4 3.4.1 - Chemoreceptors in the carotid artery are stimulated ✓ by the drop in pH
 - Impulses are sent to the medulla oblongata ✓ /medulla oblongata is stimulated
 - The medulla oblongata stimulates the heart ✓
 - to beat faster ✓ causing
 - more carbon dioxide to be taken to the lungs ✓
 - the breathing muscles ✓ /intercostal muscles and diaphragm
 - contract more actively ✓ and
 - the rate/depth of breathing increases ✓
 - more carbon dioxide is exhaled ✓
 - The carbon dioxide level in the blood decrease ✓ /returns to normal.
 (Any 7 x 1) (7)
- 3.4.2 - The athlete would develop hyperthermia ✓
 - Proteins/enzymes may denature ✓
 - He/she may lose consciousness ✓
 - leading to permanent damage ✓/death (Any 3 x 1) (3)

[50]

TOTAL SECTION B: 50
GRAND TOTAL: 150