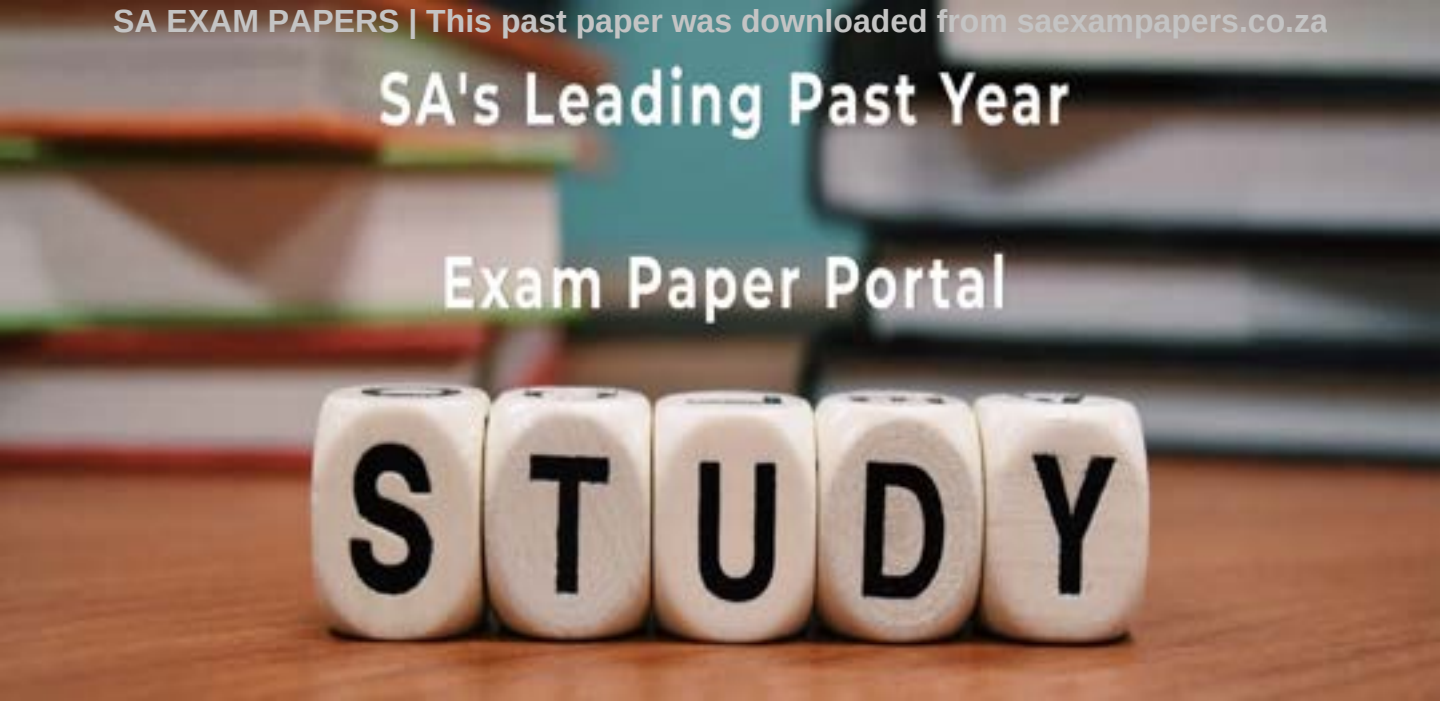

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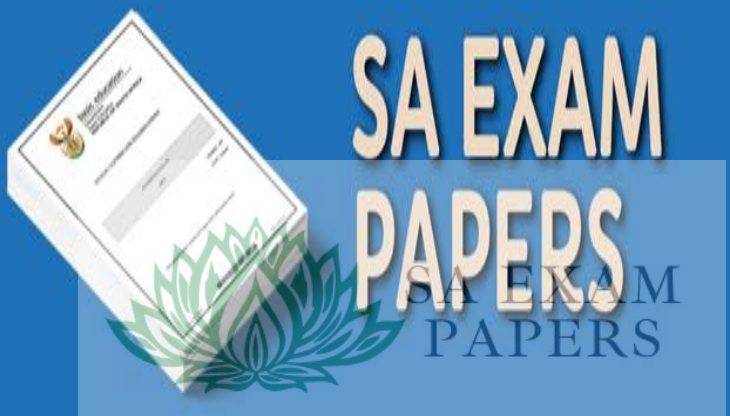


Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: 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.

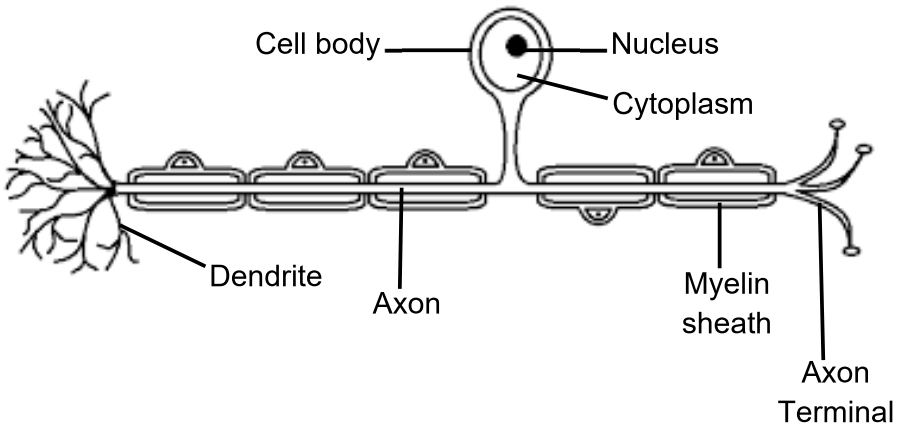
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official 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 $\frac{10}{100}$ ✓ x 84 000 ✓=8 400 babies ✓ (3)

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

(b) - Oxygenator ✓
Allows for gaseous exchange ✓

OR

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

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

2.1.4
- Human foetuses could possibly be lost / destroyed ✓
- Acquiring consent from regulatory bodies ✓/parents
- Fully informing donor parent(s) about the risks ✓
- Contrary to religious observances ✓

(Mark first TWO only) (Any 2 x 1) (2)

2.2 2.2.1 Internal ✓ fertilisation (1)

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

2.2.3 Vivipary ✓ (1)

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

OR

- The baby kangaroo latches onto a teat ✓ of the mother
- Providing nutrition ✓

(Mark first ONE only) (Any 1 x 2) (2)

2.2.5 Baby kangaroo is …
- blind ✓
- naked ✓
- relies on parent for nutrition ✓ (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
- To much light / to 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 is speed/ direction of head ✓
- Stimulates the cristae ✓
- Stimulus is converted to an impulses ✓
- 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