



Province of the  
**EASTERN CAPE**  
EDUCATION



**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2023**

**LIFE SCIENCES P1  
MARKING GUIDELINE**

**MARKS: 150**

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This marking guideline consists of 11 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 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 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.
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. 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, 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 is applicable to all official languages.

## SECTION A

## QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	D ✓✓		
	1.1.3	B ✓✓		
	1.1.4	A ✓✓		
	1.1.5	B ✓✓		
	1.1.6	C ✓✓		
	1.1.7	B ✓✓		
	1.1.8	A ✓✓		
	1.1.9	B ✓✓	(9 x 2)	(18)
1.2	1.2.1	Epididymis ✓		
	1.2.2	Menstrual cycle ✓		
	1.2.3	Fallopian tube ✓		
	1.2.4	Blastula ✓/ Blastocyst		
	1.2.5	Receptor ✓		
	1.2.6	Aqueous humour ✓		
	1.2.7	Hair cells ✓/ organ of Corti ✓		
	1.2.8	Medulla oblongata ✓		
	1.2.9	Islets of Langerhans ✓	(9 x 1)	(9)
1.3	1.3.1	None ✓✓		
	1.3.2	Both A and B ✓✓		
	1.3.3	B only ✓✓	(3 x 2)	(6)
1.4	1.4.1	Thermoregulation ✓		(1)
	1.4.2	(a) Vasoconstriction ✓		(1)
		(b) Vasodilation ✓		(1)
	1.4.3	(a) B ✓ – Hypothalamus ✓		(2)
		(b) E ✓ – Sweat gland ✓		(2)
	1.4.4	- The sweat evaporates ✓ on the surface of skin and - cools down ✓ the body		(2)
1.5	1.5.1	Cell body ✓		(1)
	1.5.2	(a) Dendrite ✓		(1)
		(b) Axon ✓		(1)
	1.5.3	Sensory neuron ✓		(1)
	1.5.4	Interneuron ✓		(1)

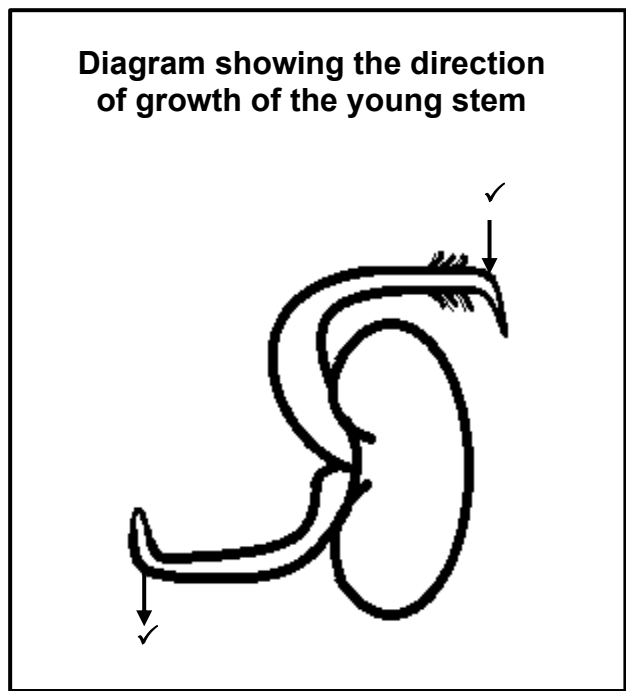
- 1.5.5 (a) Deterioration of myelin sheath ✓ (1)
- (b) Extremely slow ✓ transmission of impulses (1)
- (c) Multiple Sclerosis ✓ (1)

**TOTAL SECTION A: 50**

**SECTION B****QUESTION 2**

- 2.1 2.1.1 (a) Vagina ✓ (1)
- (b) Menstruation ✓ (1)
- 2.1.2 Progesterone ✓ (1)
- 2.1.3 - The Graafian follicle ✓ secretes the  
- hormone oestrogen ✓ which  
- makes the uterine lining spongy ✓/thick  
- so that the embryo can easily implant ✓  
- The uterine lining is more vascular ✓/blood rich  
- so that oxygen/nutrients can be brought to the embryo ✓/more  
CO<sub>2</sub>/waste can be taken away ✓ (Any 6 x 1) (6)
- 2.2 The high concentration of progesterone in the blood:  
- Inhibits the secretion of FSH ✓  
- by the pituitary gland ✓/hypophysis therefore,  
- no follicle will develop to form Graafian follicle ✓  
- resulting in no ovulation ✓/ release of ovum  
(Any 4 x 1) (4)
- 2.3 - Diploid cells in the ovary undergo mitosis ✓  
- to form numerous follicles ✓  
- Under the influence of FSH ✓  
- Of the four cells that are produced, only one survives to form a mature,  
haploid ovum ✓ one cell inside a follicle enlarges and undergoes  
meiosis ✓  
(Any 5 x 1) (5)
- 2.4 2.4.1 (a) Evenly distributed ✓ at the tip (1)
- (b) Evenly distributed ✓ at the tip (1)
- 2.4.2 - To cancel the effect (influence) of light ✓ stimuli on the direction of  
growth therefore,  
- only gravity ✓ influences the direction of growth  
**(Mark first ONE only)** (2)

2.4.3 Marking guidelines



Marking criteria	Marks
Caption	1
Young shoot bending upwards from the horizontally placed position	1
Young root bending downwards from the horizontally placed position	1

(3)

- 2.4.4
- When the root is placed horizontally ✓
  - auxins move to the lower side ✓
  - due to gravity ✓
  - The high concentration of auxins on the lower side inhibits growth ✓ on the lower side
  - The lower concentration of auxins on the upper side stimulates growth ✓ in the upper side
  - The upper side grows faster ✓/uneven growth takes place
  - causing the root to bend downwards ✓/grow toward gravity (7)

2.5 2.5.1 Adrenal ✓ gland (1)

2.5.2 Endocrine ✓ system (1)

- 2.5.3 (a)
- The level of aldosterone will be very low ✓ because
  - the high concentration of salt in the blood ✓
  - inhibits the adrenal gland ✓ and cause it
  - to secrete less aldosterone ✓ (Any 3 x 1) (3)

- (b)
- The concentration of salt in the urine will increase ✓
  - due to less water being reabsorbed ✓ (2)

- 2.6 2.6.1 (a) Duration of exposure to cellphone radiation ✓ (1)
- (b) Sperm count ✓ (1)
- 2.6.2 6 ✓/Six times a year (1)
- 2.6.3 - 100 volunteers were used ✓  
- Semen samples were tested 6 times a year ✓  
**(Mark first ONE only)** (Any 1 x 1) (1)
- 2.6.4 Same:  
- Age ✓  
- Health ✓ status/ BMI  
- Diet ✓  
- Activity ✓  
- Lifestyle ✓  
- Person measuring sperm count ✓  
**(Mark first THREE only)** (Any 3 x 1) (3)
- 2.6.5 - The longer/shorter the duration of exposure to cellphone radiation  
the lower/higher the average sperm count. ✓✓ (2)
- 2.6.7 - The loose under-garments allow the scrotum to move away from  
the body if the body temperature rises ✓  
- since spermatogenesis requires a temperature that is lower than  
the body temperature to produce normal healthy sperm ✓ (2)
- [50]**



**QUESTION 3**

- 3.1 3.1.1 A ✓ (1)
- 3.1.2 - The receptors in the skin receive the stimulus ✓ and  
 - convert it to a nerve impulse ✓  
 - the sensory neuron ✓ conducts/ transmits the nerve impulse  
 - to interneuron ✓ in the spinal cord and it transmits the impulses to  
 - the motor neuron ✓ which directs it to the relevant muscle (effector).  
 - the muscle contracts ✓ to pull the foot away quickly (Any 5 x 1) (5)
- 3.1.3 (a) D ✓ (1)
- (b) B ✓ (1)
- (c) C ✓ (1)
- (d) A ✓ (1)
- 3.2 3.2.1 Absorbs excess pressure waves ✓/ releases pressure from the inner ear/ from the inner ear/ prevents an echo (1)
- 3.2.2 - Vibrations are transmitted to ear ossicles ✓ and this causes  
 - ossicles to amplify ✓  
 - and transmit the vibrations to oval window ✓ and its vibrations  
 - cause pressure waves ✓  
 - in the fluid filled cochlea ✓ and this  
 - stimulates hair cells ✓ (organ of Corti) that  
 - convert the stimulus into impulses ✓  
 - Impulses are transmitted to cerebrum ✓  
 - through auditory nerve ✓ (Any 7 x 1) (7)
- 3.2.3 Pharynx ✓/throat (1)
- 3.2.4 - When the pressure in the outer ear increases ✓  
 - air moves through the Eustachian tube ✓ into the middle ear  
 - to equalise the pressure on the either side of the tympanic membrane ✓  
 - to prevent it from bursting ✓ (4)
- 3.3 3.3.1 A ✓ (1)
- 3.3.2 - Eyes closed  
 - Unable to move/fly/walk  
 - No down feathers  
**(Mark first ONE only)** (Any 1 x 1) (1)

- 3.3.3 - Able to move ✓  
so that they can avoid being captured by predators ✓/find food
- Eyes are open ✓  
so that they can locate the food sources/avoid predators in advance ✓
  - Have down feathers ✓  
to keep them warm ✓
  - Have ability to find food sources /feed themselves ✓  
to survive independent of parents ✓

**(Mark first THREE only)**

(Any 3 x 2)

(6)

3.4 3.4.1 Lens ✓

(1)

- 3.4.2 - The eyeball is too long ✓  
- The lens is too convex ✓/ inability of the lens of the eye to become flat(less convex)

(2)

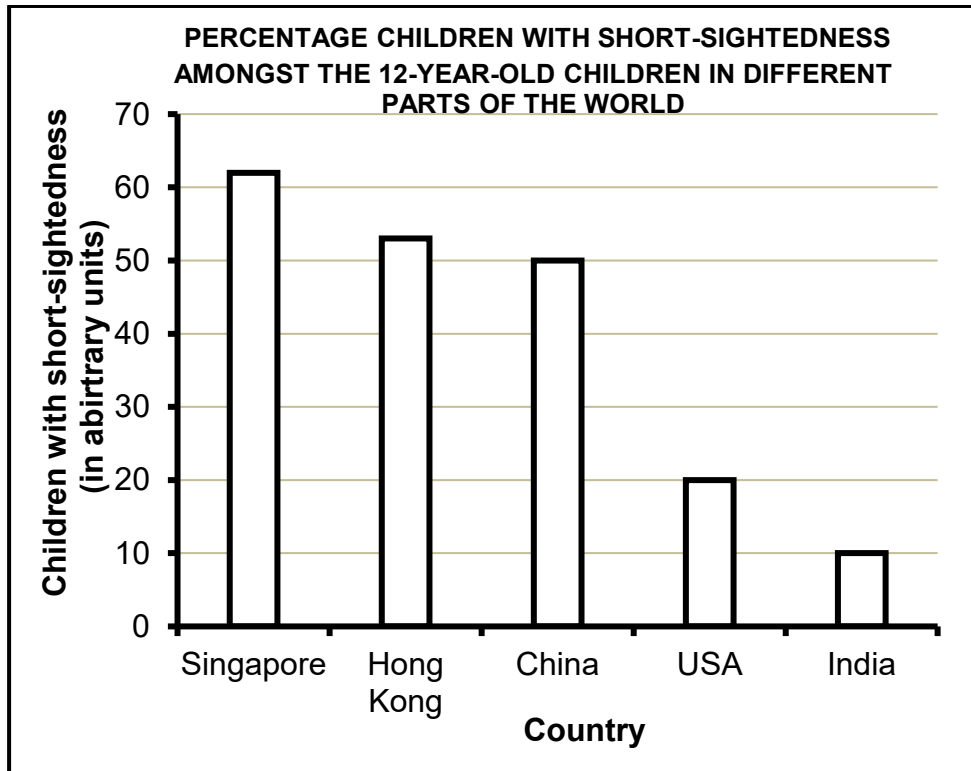
- 3.4.3 - Unable to see distant objects, ✓ but  
- able to see near objects ✓/ able see objects less than 6 m from the eyes.

(2)

3.4.4 Concave lens ✓

(1)

3.4.5



Criteria for marking graph	Mark allocation
Bar graph is drawn (T)	1
Caption of the graph includes both variables (C)	1
Correct labels on <i>x</i> -axis and <i>y</i> -axis including the unit (L)	1
Correct scale for <i>y</i> -axis Equal spaces between bars and equal width of bars for <i>x</i> -axis (S)	1
Plotting: (P) 1–4 co-ordinates plotted correctly All 5 co-ordinates plotted correctly	2

(6)

3.5 Due to the excessive sweating, and insufficient intake of fluids:

- The volume of water in the blood decreases ✓
- Osmoreceptors in the hypothalamus are stimulated ✓ and impulses are sent to pituitary gland ✓
- which secretes more ADH ✓ into the blood causing
- walls of distal convoluted tubule and collecting tubule to become more permeable to water ✓
- More water is reabsorbed into the blood capillaries ✓/less urine formed
- Water level in the blood increases ✓ / level of water in the blood returns to normal

(7)  
[50]

TOTAL SECTION B: 50  
GRAND TOTAL: 150