



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2023

MARKING GUIDELINES

LIFE SCIENCES (PAPER 1) (10831)

12 pages

PRINCIPLES RELATING TO THE MARKING OF LIFE SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum number of marks is reached and place a wavy line and 'max' in the right-hand margin.
2. **If, for example, three reasons are required and five are given**
Mark only 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-recognised 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 recognisable, 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**
Accept provided it was accepted at the memo discussion meeting.

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, 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 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.
19. **Changes to the marking guidelines**
No changes must be made to the marking guidelines without consulting the provincial internal moderator.

SECTION A**QUESTION 1**

1.1 1.1.1 B ✓✓

1.1.2 A ✓✓

1.1.3 D ✓✓

1.1.4 A ✓✓

1.1.5 B ✓✓

1.1.6 A ✓✓

1.1.7 D ✓✓

1.1.8 C ✓✓

1.1.9 B ✓✓

1.1.10 A ✓✓

(10 x 2) **(20)**

1.2 1.2.1 Vulva ✓

1.2.2 Adrenal ✓ gland

1.2.3 Homeostasis ✓

1.2.4 Cataract ✓

1.2.5 Copulation ✓

1.2.6 Fallopian tubes ✓

1.2.7 Carbon dioxide ✓

1.2.8 Goitre ✓

1.2.9 Morula ✓

(9 x 1) **(9)**

1.3	1.3.1	None ✓✓		
	1.3.2	A only ✓✓		
	1.3.3	Both A and B ✓✓	(3 x 2)	(6)
1.4	1.4.1	(a) A ✓ – Placenta ✓ (Mark first ONE only)		(2)
		(b) C ✓ – Vagina ✓ D ✓ – Cervix ✓ (Mark first ONE only)		(2)
		(c) B ✓ – Amniotic fluid ✓ (Mark first ONE only)		(2) (6)
1.5	1.5.1	Reflex arc ✓		(1)
	1.5.2	(a) A ✓		(1)
		(b) E ✓		(1)
		(c) B ✓		(1)
	1.5.3	C, D, F ✓ (accept any order)		(1)
	1.5.4	Dendrite ✓		(1)
	1.5.5	Vertebrae ✓ Meninges ✓ Cerebrospinal fluid ✓ (Mark first TWO only)	Any	(2)
	1.5.6	Myelin sheath ✓		(1) (9)
			TOTAL SECTION A:	[50]

SECTION B

QUESTION 2

- 2.1 2.1.1 Impairment of mental/physical performance✓/May pose a serious risk to health (1)
- 2.1.2 0,4 – 0,49 L.h⁻¹ ✓ (1)
- 2.1.3 – The hypothalamus/osmoreceptors is/are stimulated ✓
 – and sends impulses to the pituitary gland ✓/hypophysis
 – to secrete **more** ADH. ✓
 – ADH increases the permeability of the renal tubules✓
 – of the kidney.✓
 – **More** water is reabsorbed into surrounding blood vessels. ✓
 – The water level in the blood increases to normal ✓ levels.
 – **Less** urine is produced✓
 /Urine becomes **more** concentrated
 /**Less** water is lost through urine. Any (5)
- 2.1.4 – Sweating increases ✓ causing the
 – body temperature to decrease. ✓
 – This is because more evaporation of sweat, ✓ causes
 – **more** cooling of the skin surface/blood beneath skin surface. ✓ (4)
- 2.1.5 – Make shifts shorter/at cooler times of the day/morning and night. ✓
 – Provide clothing/shade that helps to keep workers cooler.✓
 – Supply sufficient (cold) water/fluids for workers. ✓ Any (2)
- (13)**

2.2	2.2.1	(a) A – Liver ✓ B – Pancreas ✓	(2)
		(b) Insulin ✓	(1)
	2.2.2	A regulatory substance in the body that stimulates cells to bring about change. ✓✓/A protein/chemical messenger in the body.	(2)
	2.2.3	– Excess glucose cannot be converted to glycogen ✓ – in the liver✓/organ A – thus, the glucose level in the blood remains above normal✓ – /blood glucose levels are high – the person has diabetes.✓	Any (3)
	2.2.4	Thyroxin ✓ Adrenalin ✓ Glucagon ✓	(3) (11)
2.3	2.3.1	Phototropism ✓	(1)
	2.3.2	Auxins ✓	(1)
	2.3.3	A ✓ and B ✓	(2)
	2.3.4	– Because the stem is exposed to unilateral light ✓/light from one side only, – auxins/the hormone are/is destroyed by the light ✓/move away from light. – causing the auxins/ hormone concentration to be high on the dark side ✓/side away from the light – therefore, cells are stimulated to elongate/grow on the dark side. ✓/side away from the light. – The auxin/ hormone concentration is low on the side receiving light ✓ – therefore, cells are not stimulated to elongate/ grow on this side.✓ – / side facing the light – Therefore, the plant bends/grows towards the light.	Any (4)

- 2.3.5 – As auxins are removed ✓
- plants are kept short ✓/fruit is closer to the ground
- fruit is easier to pick ✓/harvest.
- Therefore, requires less costly equipment ✓/saves on labour costs.

OR

- As auxins are removed ✓
 - There will be more lateral branches ✓/lateral branches are longer
 - they can carry more fruit ✓/higher yields.
 - Therefore, more income from sales. ✓
- Any (3)
(11)

2.4 2.4.1 Right ✓ side (1)

2.4.2 Decreased pupil size ✓

Drooping eyelid ✓

Decreased sweating ✓
(Mark first ONE only)

Any (1)

2.4.3 Cerebrum ✓ (1)

2.4.4 Autonomic ✓ nervous system (1)

2.4.5 As pupil is too small it cannot dilate enough to let more light in ✓ there is a greater risk of having an accident at night ✓, because it will be difficult to see in the dark ✓/dim light.

Any (2)

2.4.6

Adrenalin	Parasympathetic nervous system
increases heart rate ✓	decreases heart rate ✓
constricts blood vessels in the skin ✓/vasoconstriction	dilates blood vessels in skin ✓/vasodilation
dilates pupils ✓	constricts pupils ✓
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 ✓	less sweat is secreted ✓

(Mark first TWO only) Any (2 x 2) + 1 Table (5)

- 2.4.7 Accommodation ✓*
- Ciliary muscles contract ✓
 - Suspensory ligaments slacken ✓
 - Tension on the lens decreases ✓
 - Lens becomes more convex ✓
 - Increasing the refractive power of the lens ✓
 - Forming a (clear) image on the retina ✓
- Any (3 + 1* compulsory) (4)
(15)
[50]

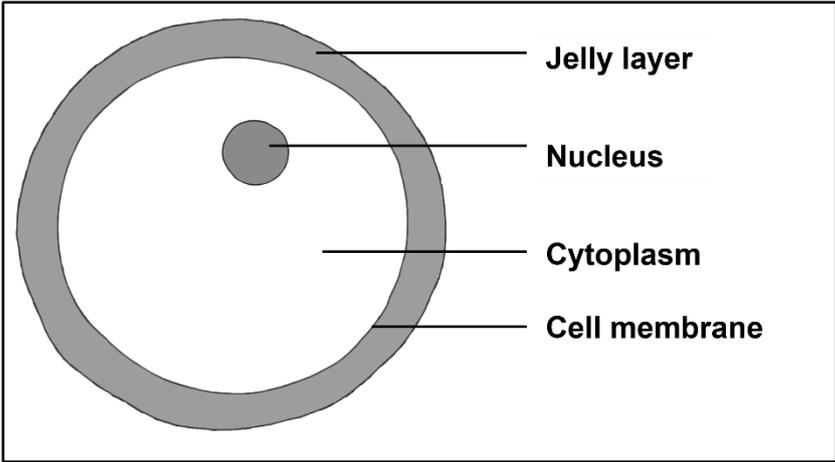
QUESTION 3

- 3.1 3.1.1 Deepening of the voice ✓/larynx enlarges
Broadening of the chest ✓/shoulders
More muscular physique ✓
Penis/testes/sex organs enlarge ✓
(Mark first TWO only) Any (2)
- 3.1.2 To determine the relationship between the density of beard growth and the concentration/level of testosterone. ✓✓
- OR**
- To determine the effect of testosterone levels on beard density ✓✓
(Must include “to” and both variables) (2)
- 3.1.3 All males should have the same:
– Age ✓
– Diet ✓
– Health ✓/level of activity
– Race ✓
– Environment ✓
(Mark first THREE only) Any (3)
- 3.1.4 $\frac{0,52 + 0,53 + 0,52 + 0,51 + 0,53}{5}$ ✓ OR $\frac{0,261}{5}$

= 0,522 ✓ μg ✓ (accept 0,52 or 0,5) (3)
- 3.1.5 Rejected ✓* A greater density of beard growth was not shown to correspond with an increased testosterone level. ✓/Even when density of hair growth was more, testosterone levels remained similar.
(1* compulsory + 1) (2)
(12)

- 3.2 3.2.1 C – Primary follicle ✓ (1)
- 3.2.2 Ovarian ✓ cycle (1)
- 3.2.3 C; B; A ✓; E; D ✓
(Mark first FIVE only) (2)

3.2.4 Diagram of an ovum



Criteria	Elaboration	Symbol	Mark
Drawing	Correct representation of an ovum (single, round cell with a nucleus)	D	(1)
Labels	ANY correct labels as shown in the sketch above. <ul style="list-style-type: none"> • One correct label • Two correct labels 	L	(1) (2)
Caption	Structure identified as an ovum	C	(1)
TOTAL			(4)

(4)

- 3.2.5 (a) FSH ✓ and LH ✓ (2)
- (b) Oestrogen ✓ and progesterone ✓ (2)
- 3.2.6 – The degeneration of the corpus luteum ✓
 – leads to a decrease in progesterone. ✓
 – The endometrium is no longer maintained ✓/shed/menstruation occurs.
 – Thus, FSH increases ✓ causing the next cycle to start. Any (3)

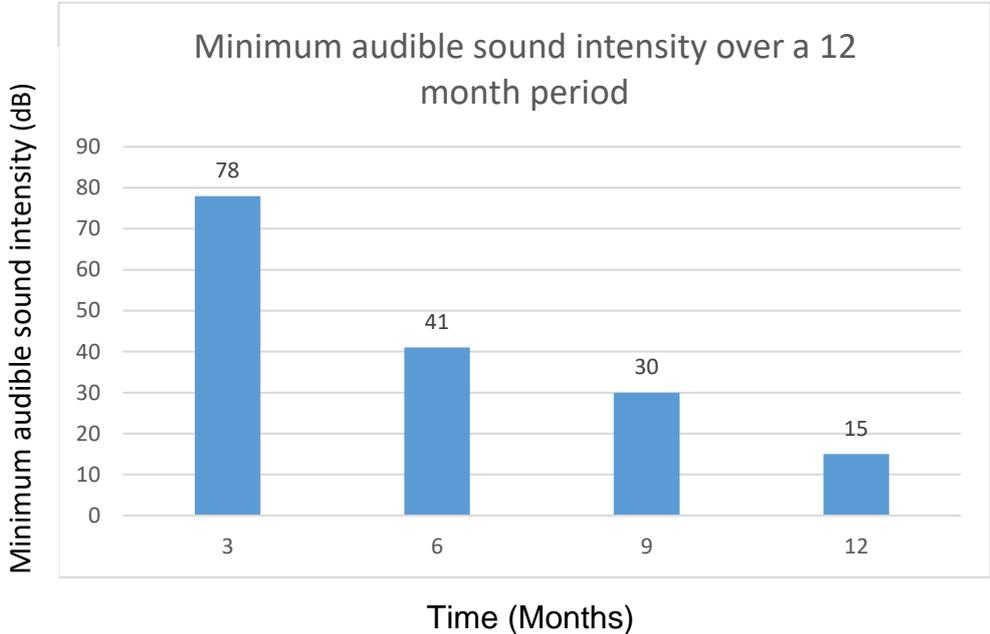
(15)

- 3.3 3.3.1 (a) Ossicles ✓ (1)
- (b) Cochlea ✓ (1)

- 3.3.2 – Sound waves cannot be (effectively) converted to vibrations by the eardrum✓/tympanic membrane
- and the ossicles do not vibrate ✓/vibrate less
- therefore, the oval window does not vibrate ✓/vibrates less
- no/little pressure waves form✓ in the cochlea
- The Organ of Corti picks up little or no stimulus ✓
- and little or no impulse is carried by the auditory nerve ✓
- with little or no interpretation occurring in the cerebrum✓ Any (4)

3.3.3 The person can hear 15 dB ✓/normal dB range/0-25 dB range (1)

3.3.4



CRITERIA:

Guidelines for assessment of the graph	ELABORATION	MARK
Correct type of graph (T)	Bar graph drawn	1
Caption for graph (C)	Both variables included	1
Axes labels (L)	X- and Y-axis correctly labelled with units	1
Scale for X- and Y-axis (S)	Equal space and width of bars on X-axis AND Correct scale for Y-axis	1
Plotting of points (P)	1 to 3 co-ordinates plotted correctly	1
	All coordinates plotted correctly	2

(6)

(13)

- 3.4 3.4.1 (a) C ✓ (1)
- (b) A ✓ (1)
- (c) B ✓ (1)
- 3.4.2 The Eustachian tube ✓ allows air to move into and out of the middle ear. ✓ (2)
- 3.4.3 – Cristae ✓
 – in the ampullae/semi-circular canals are stimulated ✓
 – by a change in the speed and direction of the body ✓/head
 – the stimulus is converted into an impulse ✓
 – the impulses are sent via the auditory nerve ✓
 – to the cerebellum ✓
 – the cerebellum then sends impulses to the skeletal muscles ✓ to restore the balance. Any (5)
- (10)**
[50]

TOTAL SECTION B: 100

TOTAL: 150