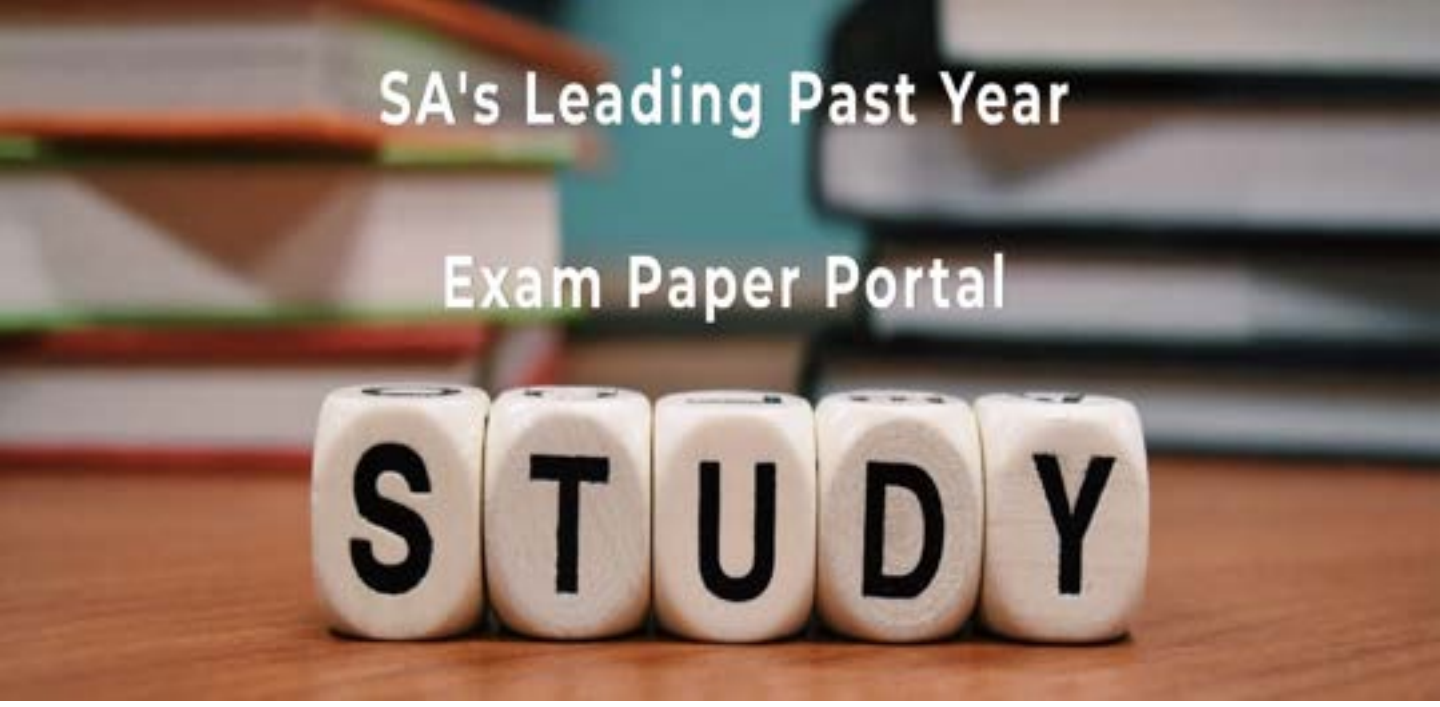

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GRADE 12

SEPTEMBER 2022

LIFE SCIENCES P1 MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 8 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 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 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	A ✓✓		
	1.1.2	A ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	D ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	A ✓✓		
	1.1.9	A ✓✓		
	1.1.10	C ✓✓	(10 x 2)	(20)
1.2	1.2.1	Prolactin ✓		
	1.2.2	Mitosis ✓		
	1.2.3	Reflex arc ✓		
	1.2.4	Autonomic ✓nervous system		
	1.2.5	Synapse ✓		
	1.2.6	Cranium ✓		
	1.2.7	Gestation ✓		
	1.2.8	Thyroid stimulating hormone ✓/ TSH		
	1.2.9	Osmoregulation ✓		
	1.2.10	Corpus callosum ✓	(10 x 1)	(10)
1.3	1.3.1	A only ✓✓		
	1.3.2	None ✓✓		
	1.3.3	A only ✓✓	(3 x 2)	(6)
1.4	1.4.1	(a) Hypothalamus ✓		(1)
		(b) Pituitary ✓gland		(1)
		(c) ADH ✓/ Antidiuretic hormone		(1)
		(d) Renal tubules ✓ /collecting tubule/distal convoluted tubule		(1)
	1.4.2	Becomes more permeable to water ✓		(1)
	1.4.3	Sweating ✓/ breathing (Any ONE) **(Mark first ONE only)**		(1)
1.5	1.5.1	(a) Motor neuron ✓		(1)
		(b) Sensory neuron ✓		(1)
	1.5.2	Cell body ✓		(1)
	1.5.3	(a) A ✓ Myelin sheath ✓		(2)
		(b) C ✓ Dendrites ✓		(2)
	1.5.4	II ✓		(1)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 T ✓

DIAGRAM I	DIAGRAM II
Has one cervix ✓	Has two cervixes ✓
Has one uterus ✓	Has two uteruses/uteri ✓

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

2.1.2
- Ectopic pregnancy ✓
- Intra-uterine foetal growth restriction ✓
- Abnormal placentation ✓
- Foetal malposition ✓ (Any 2 x 1) (2)

(Mark first TWO only)

2.1.3
- The high levels of progesterone ✓
- inhibit the pituitary gland ✓
- from releasing the FSH ✓
- Therefore, no new follicle will develop ✓
- and no ovum will be released ✓/ ovulation takes place
- for another fertilisation to occur ✓ (Any 4 x 1) (4)

2.2
- The embryo develops an outer membrane, the chorion ✓
- and an inner membrane, the amnion ✓
- The amnion forms a cavity ✓
- which encloses the amniotic fluid ✓
- The chorionic villi ✓that develops from the chorion
- together with the endometrium ✓
- forms the placenta ✓
- A hollow tube called the umbilical cord ✓ attaches
- the embryo to the placenta ✓
- The umbilical cord consists of an umbilical artery ✓
- and an umbilical vein ✓ (Any 8 x 1) (8)

2.3 2.3.1 Blood vessels ✓ (1)

2.3.2
- Blood vessels/ part A constricts ✓/vasoconstriction occurs
- causing less blood flow to the surface of the skin ✓
- therefore, less heat is lost ✓ to the environment (3)

2.3.3
- There will be a reduced/no supply of oxygen ✓ and
- glucose to the skin cells ✓
- resulting in lower/no metabolism ✓/cellular respiration/less heat energy (3)

2.3.4
- Secretion of less/no sweat causes less evaporation ✓/less cooling
- which leads to an increase in body temperature ✓/overheating
- This will result in the denaturing of the enzymes ✓
- which will cause metabolic processes to stop ✓ (4)

2.4 2.4.1
- Eyes are closed ✓/ blind
- No feathers ✓
- Cannot move ✓ (Any 2 x 1)

(Mark first TWO only) (2)

2.4.2
- Not accessible to many predators ✓
- since they cannot run from them ✓
- Therefore, increasing the chances of survival ✓ (3)

2.4.3
- The yolk volume in precocial birds will be more ✓ than in altricial
- because it needs more nutrients ✓
- to be born fully developed ✓ (3)

2.5 2.5.1 (a) Zinc supplement ✓ (1)

(b) Testosterone levels in the blood ✓ (1)

2.5.2
- Testosterone levels in the blood were measured ✓
- before the administering of the zinc supplement ✓ (2)

2.5.3
- Type of zinc product ✓
- Concentration of zinc ✓
- Volume of zinc ✓
- Way of administering the zinc ✓
- Time of administering the zinc supplement ✓ (Any 2 x 1) (2)

(Mark first TWO only)

2.5.4
- 60 males were used ✓
- Investigation was done over a period of 12 weeks ✓/ 6 weeks (Any 2 x 1) (2)

(Mark first TWO only)

2.5.5 Zinc supplements increase the testosterone levels in the blood✓✓ (2)

2.5.6
- Stimulates the production of sperm cells ✓
- Stimulates puberty ✓

(Mark first TWO only) (2)

[50]

QUESTION 3

3.1 3.1.1 Cochlea (1)

3.1.2 Transmits impulses to the brain ✓ (1)
(Mark first ONE only)

3.1.3 To prevent echo ✓ (1)

3.1.4
- Sudden changes in the speed and direction of head movement ✓
- stimulates the cristae ✓
- in the semi-circular canals ✓
- A change in the position of the head ✓
- stimulates the maculae ✓
- in the utriculus and sacculus ✓
- to send the impulse ✓
- via the auditory nerve ✓
- to be interpreted in the cerebellum ✓
- Cerebellum sends impulses to skeletal muscles ✓ to restore balance (Any 7 x 1) (7)

3.1.5
- No vibrations will occur ✓
- and no pressure waves will be created in the inner ear ✓
- Organ of Corti/hair cells will not be stimulated ✓
- Therefore, no impulses will be sent to the cerebrum ✓ (4)

3.2 3.2.1 To expose leaves to light for photosynthesis ✓ (1)
(Mark first ONE only)

3.2.2 Geotropism ✓/ gravitropism (1)

3.2.3 To eliminate the effect of gravity ✓/ expose the stem to gravity on all sides (1)

3.2.4
- Auxins will move to the lower side of the growing tip ✓
- There will be a high concentration of auxin in the lower side ✓ stem
- which will stimulate cell elongation ✓/ growth
- Therefore, the lower side will grow faster ✓
- This will cause the stem to bend upwards ✓ (5)

3.2.5
- The auxin ✓
- produced at the tip of the stem ✓ will be removed
- Therefore, stem will not grow ✓
- Lateral branches will develop ✓
- in the absence of apical dominance ✓ (Any 4 x 1) (4)

3.2.6 Gibberellins ✓ (1)

3.3 3.3.1 Cornea ✓ (1)

3.3.2
- The circular muscles relax ✓
- While the radial muscles contract ✓
- to cause the pupil to dilate ✓ (Any 2 x 1) (2)

3.3.3
- Muscles in Part A / ciliary muscles will contract ✓
- Causing the suspensory ligaments to slacken ✓
- Resulting in the lens becoming more rounded ✓/convex (3)

3.3.4 (a) C ✓ (1)

(b)
- If the drainage channels are fully blocked ✓
- the excess fluid accumulates in the eye ✓ (2)

(c)
- When the photoreceptors are damaged the stimuli cannot be converted to nerve impulses ✓
- The damage to optic nerve prevents the transmission nerve impulses ✓
- to the cerebrum for interpretation ✓ (3)

3.4 3.4.1 (a) Kidney ✓ (1)

(b) Aldosterone ✓ (1)

3.4.2 (a)
- Salt levels in the blood decreases ✓
- Because less/ no aldosterone is secreted ✓
- Therefore, renal tubules are less permeable ✓
- Less salt is reabsorbed into blood ✓
- since salt levels are above normal in blood ✓ (5)

(b)
- There will be less salt in the urine ✓
- Because renal tubules are more permeable to salt ✓
- More salt is reabsorbed into blood ✓
- Since salt levels were below normal in the blood ✓ (4)

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150