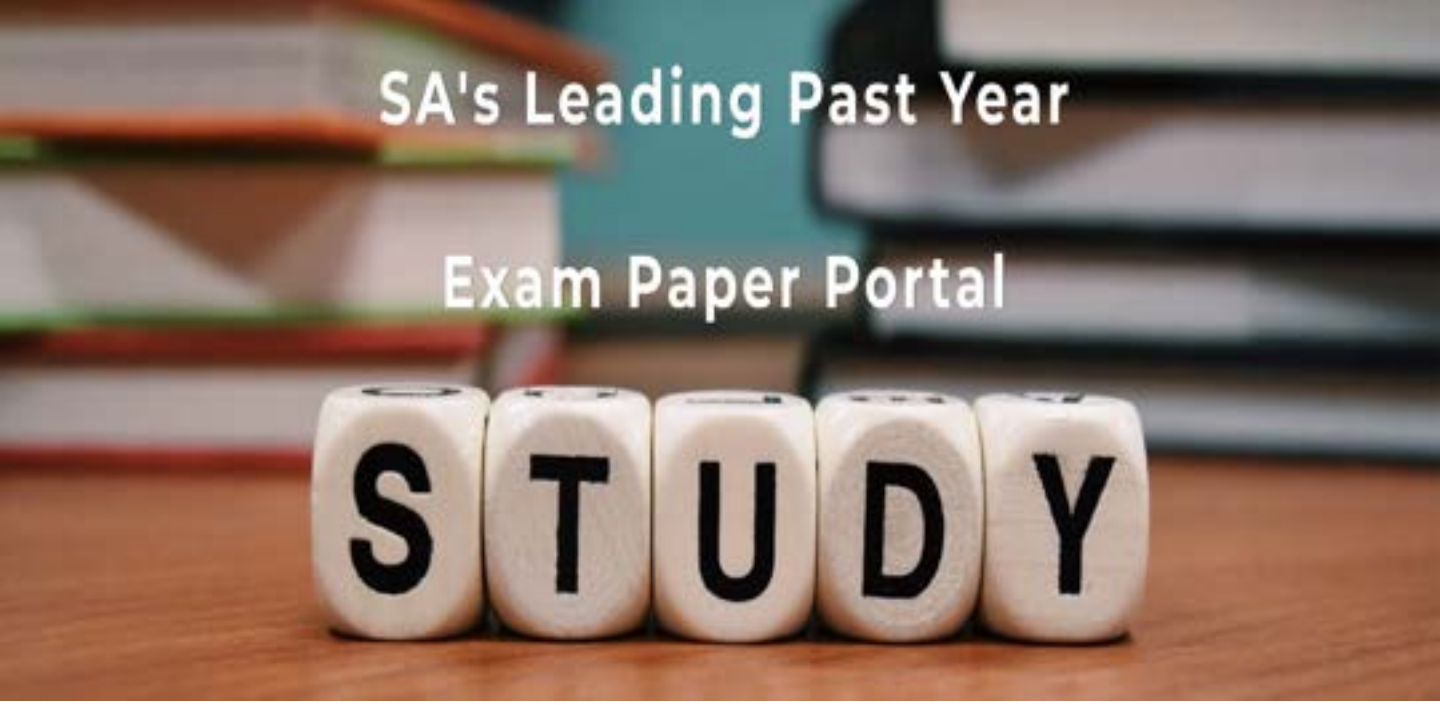

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GRADE 12

LIFE SCIENCES P2

VERSION 1 (NEW CONTENT) FOR FULL-TIME CANDIDATES

NOVEMBER 2012

FINAL MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2012

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is 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 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 is incorrect, do not credit. If sequence and links becomes correct again, resume credit.

9. **Non-recognized 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 recognizable 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 national memo discussion meeting.

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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. No changes must be made to the marking memoranda without consulting the Provincial Internal Moderator who in turn will consult with the National Internal Moderator (and the External moderators where necessary)

20. Only memoranda bearing the signatures of the National Internal Moderator and the UMALUSI moderators and distributed by the National Department of Education via the Provinces must be used.

SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	D✓✓		
	1.1.3	D✓✓		
	1.1.4	B✓✓		
	1.1.5	C✓✓		
	1.1.6	A✓✓		
	1.1.7	B✓✓/C		
	1.1.8	B✓✓		
	1.1.9	C✓✓		
	1.1.10	No correct answer	(9 x 2)	**(18)**
1.2	1.2.1	Fruit✓		
	1.2.2	Altricial✓ development		
	1.2.3	Pioneer✓		
	1.2.4	Ecological footprint✓		
	1.2.5	Dendrites✓		
	1.2.6	Negative feedback✓		
	1.2.7	Diabetes✓mellitus		**(7)**
1.3	1.3.1	B only ✓✓		
	1.3.2	B only ✓✓		
	1.3.3	None✓✓		
	1.3.4	Both A and B✓✓		
	1.3.5	B only✓✓		
	1.3.6	A only✓✓		
	1.3.7	None✓✓	(7 x 2)	**(14)**
1.4	1.4.1	(a) F✓ testis✓/seminiferous tubules		(2)
		(b) C✓ urethra✓		(2)
		(c) D✓ epididymis✓		(2)
	1.4.2	testosterone✓		(1)
	1.4.3 (a)	F✓		(1)
	(b)	B✓		(1)
				(9)

TOTAL SECTION A: 48

Use the following guide to convert the mark out of 48 to a mark out of 50:

Mark Range	Action Required
Marks from 0 - 11	Leave marks as is
Marks from 12 - 35	add 1 mark
Marks from 36 - 48	add 2 marks

SECTION B

QUESTION 2

2.1 2.1.1 (a) Cerebellum✓ (1)
(b) Medulla oblongata✓ (1)

2.1.2 B ✓ (1)

2.1.3 If TSH is not secreted,
the thyroid✓* will not be stimulated
to secrete thyroxine✓*
and the level of thyroxine will not be regulated✓/will decrease
this would lead to the following:

- the basal metabolic rate/rate of respiration will decrease✓
- the energy levels will decrease✓
- tissue growth and development will be hindered✓
- the heart rate will slow down✓
- hypothyroidism✓/cretinism/myxodema/any symptom

***2 compulsory marks + any 2 others** (4)
(7)

2.2 2.2.1 Size of the needle✓/needle used
Thickness of the thread✓ } (type of thread)
Colour of thread✓ }
Size of the eye of the needle✓
Time period between attempts✓
Starting distance between needle and thread✓ any (2)
(Mark first TWO only)

2.2.2 It takes more time✓ to thread a needle with one eye open compared to having both eyes open✓

OR

It takes less time ✓to thread a needle with both eyes open compared to having one eye open✓

OR

The more attempts undertaken✓ to thread the needle the less time it takes✓ any (1 x 2) (2)

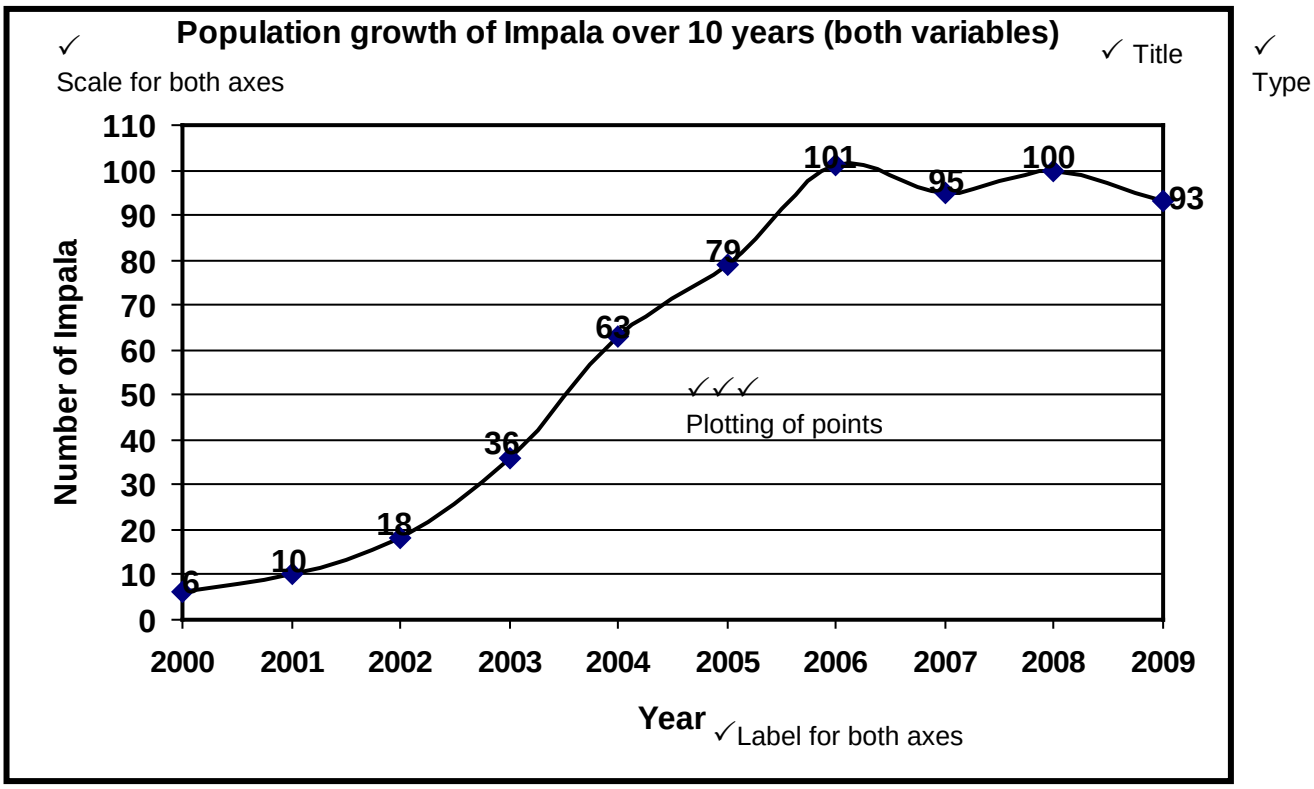
2.2.3 To improve the reliability✓ of the results (1)

2.2.4 The ciliary muscles contract✓
Suspensory ligament becomes slack/relaxed✓
The lens bulges and becomes more convex✓/tension on the lens is released
The sclera pulls forward✓
The refractive power of the lens increases✓
A clear image is formed on the retina✓ any (4)
(9)

2.3	2.3.1	(a) Umbilical cord✓		(1)
		(b) Cervix✓/endometrium/uterus wall		(1)
	2.3.2	It provides the fluid medium for free movement of foetus✓ It acts as a shock absorber✓ It protects the foetus against dehydration✓ It protects the foetus against temperature changes✓ Promotes lung development✓ Holds waste✓ **(Mark first ONE only)**	any	(1)
	2.3.3	Uterine walls are made up of (strong) muscles✓ – which contract and relax to push the foetus✓/ afterbirth forward Cervix has (elastic) muscles✓ – allowing dilation of the opening to let the foetus out✓	any (1 x 2)	(2)
	2.3.4	Respiratory✓/Gaseous exchange system Digestive ✓system Excretory✓ system **(Mark first TWO only)**	any	(2)
	2.3.5	High levels of progesterone✓ inhibits the secretion of FSH✓		(2) **(9)**
2.4		Heat receptors in the skin are stimulated by high temperature✓ Impulses sent to hypothalamus✓ Impulses sent to blood vessels✓ Vasodilation occurs✓/arterioles to the skin become wider More blood flows to the capillaries✓ More heat reaches the skin surface✓ More heat is lost to the surroundings✓ More blood flows to the sweat glands✓ Sweating increases ✓ More heat is lost through evaporation of sweat✓	any	**(5)** **[30]**

QUESTION 3

3.1 3.1.1



Checklist for the mark allocation of the graph

Correct type of graph with points joined	1
Title of graph (both variables)	1
Correct label for X-axis and Y-axis	1
Appropriate scale for X-axis and Y-axis	1
Plotting of points	1–1 to 4 points plotted correctly 2–5 to 9 points plotted correctly 3–all 10 points plotted correctly

NOTE:

If the wrong type of graph is drawn:
- Marks will be lost for 'correct type of graph'

If axes are transposed:
- Marks will be lost for labelling of X-axis and Y-axis (7)

3.1.2 Logistic✓/sigmoid/S-shaped growth form (1)

3.1.3 Population increases at first✓ and then slows down✓/becomes constant

OR

Population stabilises✓/ stationary phase reached when the carrying capacity has been reached✓ any (1 x 2) (2)

3.1.4 Lag✓/establishment phase (1)

3.1.5 Growth was slow✓ since impala first had to acclimatise to the area✓/finding mating partners/ sexually immature/small starting population size (2)

3.1.6 (a) Smaller impala will eat leaves from lower branches✓ and bigger eland, leaves from higher branches✓

OR

They feed on the same resource at different heights✓✓

Any (1 x 2) (2)

(b) Resource partitioning✓/spatial partitioning /niche partitioning (1)

(16)

3.2 3.2.1 (45 – 16) per 1 000✓= $\frac{29}{1\,000}$ x 100✓ = 2,9 %✓ (3)

3.2.2 2240✓ (1)

3.2.3
- Insufficient health care✓ to help fight diseases
- Poor access to health care✓
- Lack of clean water ✓
- Insufficient sewage disposal✓/sanitation/ hygiene increases the spread of diseases
- Poor nutrition✓/poverty
- War✓/violence/crime
- High incidence of diseases✓
- High incidence of accidents✓

(Mark first THREE only) any (3)

(7)

3.3 3.3.1 2 ✓ (1)

3.3.2

Pyramid 1	Pyramid 2
1 Life expectancy is low✓	1 Life expectancy is high✓
2 Birth rate is high✓	2 Birth rate is low✓

(Mark first TWO only) **+** ✓ for table 2 x 2 (5)

3.3.3 To plan✓/budget for service delivery (1)

(7)

[30]

TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1 4.1.1 (a) killing✓/ removing of organisms to reduce habit destruction✓/ overpopulation/prevent spread of disease/ any other acceptable reason (2)

(b) the **maximum population size**✓ that can be supported over a period of time in a particular habitat✓ (2)

4.1.2 (a) Scientist have installed artificial watering points throughout the park✓ causing elephants to be distributed throughout the park,✓ instead of them being confined to where natural water sources (like rivers) were. (2)

(b) Global warming✓is also responsible for reducing biodiversity (1)

4.1.3 We are playing God ✓– nature has its own way of regulating the number of elephants when the carrying capacity is reached✓/ environmental resistance increases

Man has confined the elephants to parks✓ thereby reducing their natural habitat✓

Morally wrong✓to kill since the elephants also have a right to live✓/elephants also have a social structure

Affect the economy✓ as ecotourism could decrease✓

There is no evidence✓ that culling is effective in reducing✓ habitat destruction

Elephants have a good memory✓ therefore when family members are killed they become very aggressive✓ (4)
(Mark first TWO only) (2 x 2) **(11)**

4.2 4.2.1 Competitive exclusion✓/interspecific competition (1)

4.2.2 When grown alone population size of both species A and B increased greatly✓*****/ to over 100 because there is no competition✓*****

When the two species are grown together in the same habitat
Population size of species A and B increases✓ in the first week✓/to about 40
since there was sufficient food✓ for the low population size of both species✓
As food supply decreased, competition✓ increased
Thereafter species A outcompeted species B✓
Resulting in species A increasing✓/up to 110
while species B stabilised✓/remained at 40 and then declined✓
*** 2 compulsory marks + any 4 others** (6)

4.2.3 Species A and B will increase for a longer period✓/ It will take longer for species A to outcompete species B due to no✓/reduced competition (2)
(9)

4.3 **Mechanism of reflex action**

Example: withdrawal of hand after being pricked by a pin✓/from hot surface/ (any other suitable example) (1)

- Receptors in the skin✓
- receive the stimulus✓
- Stimulus is converted into a nerve impulse✓
- The impulse travels along the sensory neuron✓
- towards the spinal cord✓
- along the dorsal root✓ of the spinal nerve✓
- In the spinal cord, the sensory neuron makes synaptic contact✓
- with the connector✓/ interneuron
- and then the impulses are transmitted along the motor neuron✓
- along the ventral root✓ of the spinal nerve
- to the effector organ✓/muscle
- which contracts ✓and pulls the hand away✓
- The reflex action provides a quick response to the stimulus so injury is minimised✓ max (10)

Action of adrenalin

Example: chased by a ferocious dog✓***/***(any other suitable example) (1)

Adrenalin prepares the body to cope with the emergency, danger and stress in the following ways:

- Brain becomes aware of danger✓/emergency situation
- through impulses from the sense organs✓
- Adrenal gland✓ is stimulated to secrete adrenalin
- Messages are then sent to various parts of the body✓ (blood vessels, heart)
- Blood vessels of the skin✓/digestive system constrict✓,
- but the blood vessels to the heart muscles and brain✓ (important vital organs during an emergency) dilate✓
- The heart rate also increases✓
- Rate and depth of breathing increases✓
- The conversion of glycogen to glucose is promoted✓ in the liver
- Vital organs receive more blood✓/oxygen/glucose
- to raise metabolic activities of cells ✓to release more energy
- muscle tone increases✓
- pupil dilate✓
- to allow a rapid response✓ to ensure safety max (5)

Content (17)
Synthesis (3)
(20)

ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Description
3	Well structured – demonstrate insight and understanding of question
2	Minor gaps or irrelevant information in the logic and flow of the answers
1	Attempted but with significant gaps and irrelevant information in the logic and flow of the answers
0	Not attempted/nothing written other than question number/no correct information

TOTAL SECTION C: 40
GRAND TOTAL: 150

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