



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION

LIFE SCIENCES P1

2015

MEMORANDUM

MARKS: 150

This memorandum consists of 11 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

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 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 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 memorandum**
No changes must be made to the memoranda without consulting the provincial internal moderator who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).
20. **Official memoranda**
Only memoranda bearing the signatures of the national internal moderator and the Umalusi moderators and distributed by the National Department of Basic Education via the provinces must be used.

SECTION A**QUESTION 1**

1.1	1.1.1	C✓✓		
	1.1.2	D✓✓		
	1.1.3	B✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	D✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	A✓✓	(10 x 2)	(20)
1.2	1.2.1	Biodiversity✓		
	1.2.2	Oval window✓		
	1.2.3	Vivipary✓		
	1.2.4	Vas deferens✓/sperm duct		
	1.2.5	Ovipary✓		
	1.2.6	Cytokinesis✓		
	1.2.7	Food security✓		
	1.2.8	Eustachian tube✓		
	1.2.9	Short-sightedness✓/Myopia /near-sightedness	(9 x 1)	(9)
1.3	1.3.1	A only✓✓		
	1.3.2	B only✓✓		
	1.3.3	Both A and B✓✓		
	1.3.4	B only✓✓	(4 x 2)	(8)
1.4	1.4.1	A – Ciliary✓ muscle/(body) B – Iris✓ E – Choroid✓		(3)
	1.4.2	(a) F✓ (b) D✓ (c) C✓ (d) A✓		(1) (1) (1) (1) (7)
1.5	1.5.1	(a) Chiasma✓ (b) Chromatid✓/chromosome (c) Cell membrane✓/plasmalemma (d) Prophase I✓ (e) Crossing-over✓		(1) (1) (1) (1) (1)
	1.5.2	There would be a decrease in genetic variation✓		(1) (6)

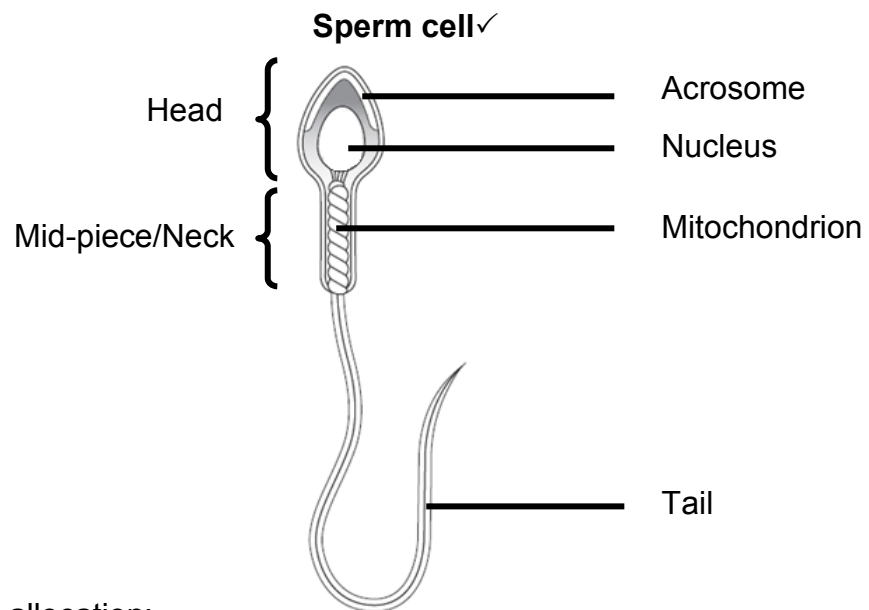
TOTAL SECTION A: 50

SECTION B

QUESTION 2

- 2.1 2.1.1 Rapid✓, automatic response✓ to a stimulus (2)
- 2.1.2 A – Sensory neuron✓/Afferent neuron
B – Interneuron✓/connector neuron/association neuron/relay neuron
C – Motor neuron✓/Efferent neuron (3)
- 2.1.3 (a) C✓ (1)
(b) A✓ (1)
- 2.1.4 Protects the human body against further damage✓ (1)
(8)
- 2.2 2.2.1 Spermatogenesis✓ (1)
- 2.2.2 - Higher temperature will denature the enzymes✓
- and damage cell membranes✓ (2)
- 2.2.3 - An increase in exercise✓
increases sperm count✓ (2)
- 2.2.4 - Increase the number of participants✓/sample size
- Repeat the investigation✓ (Any 1) (1)
(MARK FIRST ONE ONLY)

2.2.5



Mark allocation:

Heading✓

Any 2 correct labels ✓✓

Correct drawing✓ (Must have head, mid-piece and a tail in appropriate proportions)

(4)
(10)

- 2.3 2.3.1 0,038✓✓s (2)
- 2.3.2 - As blood alcohol content increases✓
- the braking response time increases✓ (2)
- OR**
- The braking response time increases✓
- as the blood alcohol content increases✓
- 2.3.3 - The motorist cannot judge the distance of an obstacle✓
- and will therefore not be able to stop in time to avoid the accident✓
- OR**
- Cannot judge boundaries of a lane✓
- and may therefore drive in the wrong lane✓ (2)
- 2.3.4 (a) Cerebrum✓ (1)
- (b) Cerebrum✓ (1)
- (c) Cerebellum✓ (1)
- 2.3.5 - Acts as a control✓/baseline assessment
- so that the results can be attributed to the alcohol content in the blood and not any other factor✓ (2)
- (11)**
- 2.4.1 2.4.1 (a) Exercise✓/level of activity (1)
- (b) Skin temperature✓ (1)
- 2.4.2 - Ask permission✓ from school/parents/learners
- Deciding how many learners to include in the sample✓
- Deciding which gender to choose✓
- Deciding which age group to choose✓
- Deciding on the venue✓
- Deciding on the duration✓
- Deciding on the groups✓/experiment and control
- Deciding on the measuring techniques✓
- Deciding on the measuring apparatus✓
- Deciding on recording method✓ (Any 2) (2)
- (MARK FIRST TWO ONLY)**
- 2.4.3 Skin temperature increased✓ (1)
- 2.4.4 Gender✓
Age✓
Duration of the exercise✓/10 minutes (Any 1) (1)
- (MARK FIRST ONE ONLY)**
- 2.4.5 Group A✓ (1)

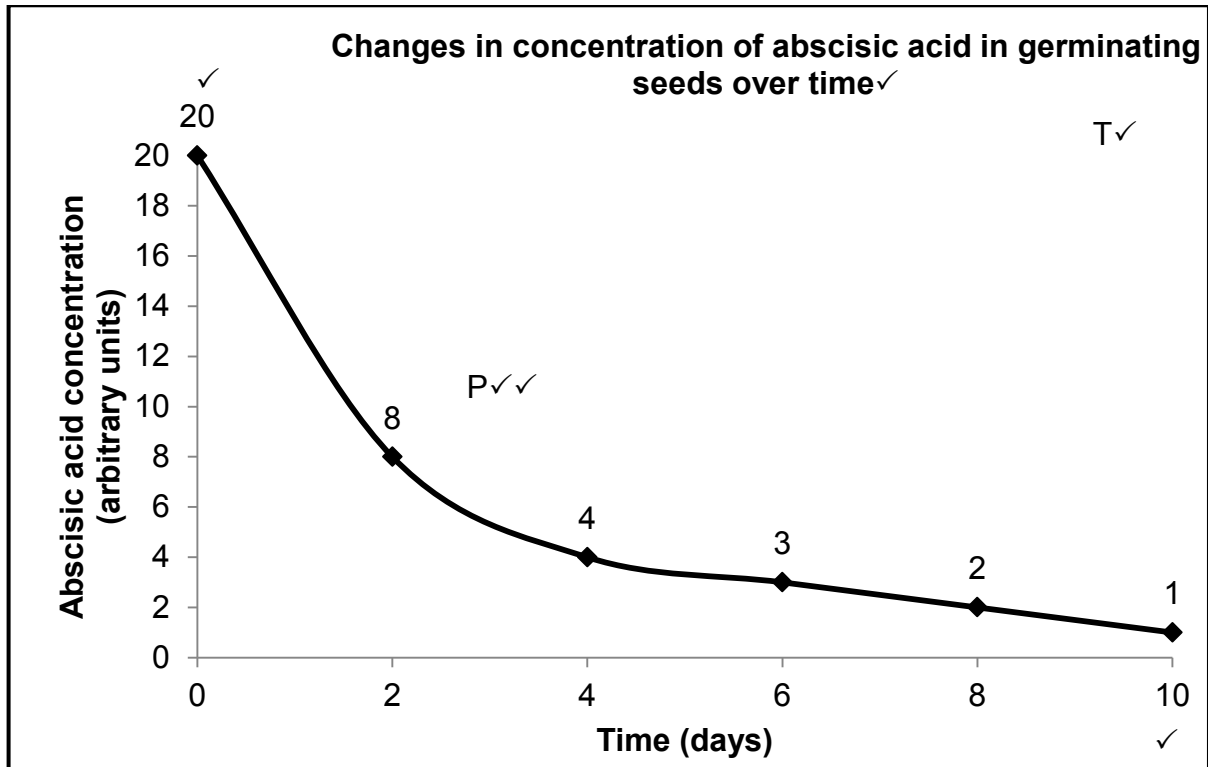
- 2.4.6
- Increased respiration✓
 - causes increased body temperature✓
 - Hypothalamus is stimulated✓
 - which leads to dilation of blood vessels✓
 - More blood flows to the skin✓
 - and the sweat glands✓
 - which become more active✓/releasing more sweat
 - to lower the body temperature✓

(Any 4)

(4)
(11)
[40]

QUESTION 3

3.1 3.1.1



Mark allocation of the graph

Criteria	Mark Allocation
Correct type of graph including the joining of points	1
Title of graph	1
Correct scale, label and unit for X-axis	1
Correct scale, label and unit for Y-axis	1
Drawing of the graph	0: No points plotted correctly 1: 1 to 5 points plotted correctly 2: All 6 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 only for labelling of X-axis and Y-axis.

(6)

- 3.1.2 (a) Decreased ✓
- (b) Increased ✓

(1)

(1)

(8)

- 3.2 - Auxins✓
 - are sensitive to light✓
 - Light stimulus from one side causes auxins to move to the shaded side✓/destroyed on the illuminated side
 - Auxin concentration is higher on the shaded side✓
 - This promotes cell elongation✓ on shaded side of plant
 - resulting in more growth✓ on this side
 - Stem grows towards the light stimulus ✓
 - This is called phototropism✓ (Any 4) (4)
- 3.3 3.3.1 - Gland that secretes hormones✓
 - directly into the blood✓/(rather than through ducts) (2)
- 3.3.2 (a) Insulin✓ (1)
 (b) Glucagon✓ (1)
- 3.3.3 Pancreas✓/Islets of Langerhans (1)
- 3.3.4 - There will be NO conversion of glucose into glycogen✓
 - in liver✓/muscles
 - No absorption of glucose by cells✓
 - The blood glucose levels will stay high✓
 - and may lead to diabetes✓/any example of symptoms (Any 4) (4)
(9)
- 3.4 3.4.1 $100 - (17+14+45+6)✓/82\%$
 $= 18✓\%$ (2)
- 3.4.2 Transport✓ (1)
- 3.4.3 - Increased number of houses built✓/increased population
 - More houses received electricity connectivity✓
 - More street lamps provided by municipality✓
 - A very cold winter✓ (Any 2) (2)
(MARK FIRST TWO ONLY)
- 3.4.4 - It creates more CO₂ ✓ which is released into the atmosphere
 - CO₂ traps more heat within the atmosphere✓
 - causing the 'enhanced greenhouse effect' ✓
 - which causes a rise in the average global temperature✓
 - This is known as 'global warming'✓ (Any 4) (4)

- 3.4.5
- Invest in alternative forms of fuels ✓/energy generation/solar/wind/nuclear that will limit dependence on fossil fuels✓
 - Improve public transport system✓
to reduce the number of cars on the roads✓
 - Invest in research and development of new technologies✓/any example to decrease CO₂ output✓
 - Introduce legislation✓
to penalise offending industries✓/to allow incentives to industries that adhere to legalisation to reduce CO₂ emissions
 - Educating people✓
on strategies to reduce CO₂ output✓
- (Any 2 x 2) (4)
(13)
- (MARK FIRST TWO ONLY)**

- 3.5
- 3.5.1 A species that does NOT occur naturally in a country✓
outcompeting the natural species of the country✓ (2)
- 3.5.2
- An excessive growth of water hyacinths on the surface of the water will block out the light✓/deprive submerged plants of sunlight/limits photosynthesis
 - disrupting food chains/webs✓
 - Alien plants outcompete the indigenous species✓
 - this may lead to some of the indigenous species becoming eliminated thus disrupting food chains✓/webs
 - Alien plants have a greater demand on natural resources ✓
 - resulting in a depletion of natural resources for the indigenous species✓
- (Any 2 x 2) (4)
(6)
[40]

SECTION C**QUESTION 4**

- **FSH**✓/follicle stimulating hormone
- is secreted by the pituitary gland✓
- FSH stimulates the development of a primary follicle✓
- into a Graafian follicle✓

- As the follicle develops it secretes **oestrogen**✓
- which causes the lining of the uterus✓/endometrium
- to become thicker✓/more vascular
- in preparation for a possible implantation of the embryo✓/development of the foetus

- The pituitary gland✓
- secretes **LH**✓
- which causes the Graafian follicle to rupture and release the ovum✓
- This is called ovulation✓

- The empty follicle changes and becomes a corpus luteum✓
- which begins to secrete **progesterone**✓
- which causes further thickening✓
- of the endometrium✓

- High levels of progesterone✓
- inhibits the secretion of FSH✓
- which prevents development of a new follicle in the ovary✓

- If there is no fertilisation, the corpus luteum degenerates✓
- which leads to a drop in progesterone✓
- The endometrium disintegrates and is shed during menstruation✓

- If fertilisation occurs, the corpus luteum remains intact✓
- which leads to the levels of progesterone remaining high✓
- to maintain pregnancy✓

(Any 17)
Content:
Synthesis: (17)
(3)

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance	Logical sequence	Comprehensive
All information provided is relevant to the topic.	Ideas arranged in a logical/cause-effect sequence.	Answered all aspects required by the essay.
All information relevant to the events of the menstrual cycle only (no pregnancy) and the hormones FSH, LH, oestrogen and progesterone.	All events of the menstrual cycle are in sequence.	All FOUR correct hormones mentioned with their functions.
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150