basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

2019

MARKING GUIDELINES

Final: 01 June 2019

MARKS: 150

These marking guidelines consist of 10 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. Marking guidelines 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.

19. **Changes to the marking guidelines**
No changes must be made to the marking guidelines. The provincial internal moderator must be consulted, who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).

20. **Official marking guidelines**
Only marking guidelines 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	B✓✓		
	1.1.2	C✓✓		
	1.1.3	C✓✓		
	1.1.4	D✓✓		
	1.1.5	A✓✓		
	1.1.6	D✓✓		
	1.1.7	B✓✓		
	1.1.8	A✓✓		
	1.1.9	C✓✓	(9 x 2)	**(18)**
1.2	1.2.1	Spindle fibres✓/spindle threads		
	1.2.2	Maculae✓		
	1.2.3	Anti-diuretic hormone✓/ADH		
	1.2.4	Methane✓/CH_4		
	1.2.5	Aquifer✓		
	1.2.6	Medulla oblongata✓		
	1.2.7	Homeostasis✓		
	1.2.8	Chorion✓		
	1.2.9	Acrosome✓		**(9)**
1.3	1.3.1	B only✓✓		
	1.3.2	B only✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	**(6)**
1.4	1.4.1	(a) Sclera✓		(1)
		(b) Lens✓		(1)
		(c) Ciliary body✓/ciliary muscle		(1)
	1.4.2	Pupillary mechanism✓		(1)
	1.4.3	Iris✓		(1)
	1.4.4	Near vision will be blurred✓/Only distant objects will be clearly visible		(1)
				(6)

1.5	1.5.1	(a)	Pituitary✓gland/hypophysis		(1)
		(b)	Graafian follicle✓		(1)
		(c)	Ovulation✓		(1)
		(d)	Corpus luteum✓		(1)
	1.5.2		Remains low✓/decreases		(1)
	1.5.3		- Stimulates ovulation✓ - Stimulates the development of the corpus luteum✓ **(Mark first ONE only)**	Any	(1) **(6)**
1.6	1.6.1		Black✓ **(Mark first ONE only)**		(1)
	1.6.2	(a)	- They constricted✓/vasoconstriction occurred - Less blood flowed in the blood vessels✓	Any	(1)
		(b)	- The sweat glands became less active✓ - Less sweat was secreted✓	Any	(1)
	1.6.3		Hypothalamus✓		(1)
	1.6.4		- The whole body will appear black✓/black and grey - There will be no white areas✓ **(Mark first ONE only)**	Any	(1) **(5)**

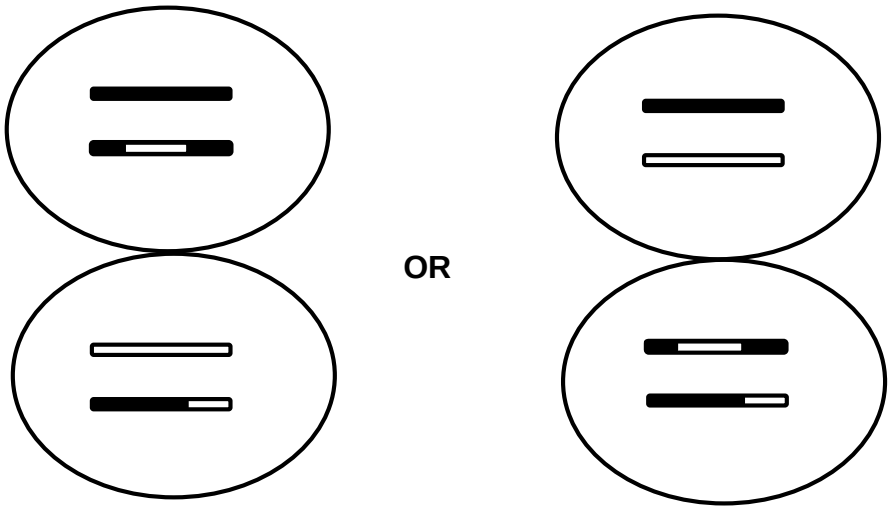
TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 Telophase I✓ (1)

2.1.2



MARKING GUIDELINE

Only two gametes drawn (**G**)	1
Gamete contains 2 chromosomes (**C**)	1
The chromosomes are unreplicated (**U**)	1
Correct shading on ALL the unreplicated chromosomes (**S**)	1

(4)

2.1.3

T✓

Prophase I	Prophase II
The cell is diploid✓/has homologous chromosomes	The cell is haploid✓/does not have homologous chromosomes
Crossing over takes place✓	No crossing over takes place✓

(Mark first TWO only) 1 + 4 (5)

(10)

2.2 2.2.1 Phototropism✓ (1)

2.2.2
- The same species✓ of plant was used in each set-up
- Identical clinostats✓ were used in each set-up
- The same period of time✓/5 weeks was used for each set-up
- Each apparatus was placed in a box with a single opening✓
- The opening on each box was in the same position✓/was the same size/allowed the same amount of light to enter

(Mark first TWO only) Any (2)

2.2.3
- The investigation was only done once✓/not repeated
- Only one plant was used in each set-up✓/the sample size was too small

(Mark first ONE only) Any (1)

	2.2.4	(a) B✓		(1)
		(b) A✓		(1)
	2.2.5	- The auxins moved away from the light✓/were destroyed by the light - so that the darker side had a high concentration of auxins✓ - and the lighted side had a low concentration of auxins✓		(3) **(9)**
2.3	2.3.1	- From the dendrite✓ - to the axon✓		(2)
	2.3.2	0 to 1✓✓ µm/ 0 to 0,9 µm		(2)
	2.3.3	As the axon diameter increases the speed of the impulse increases✓✓ OR As the axon diameter decreases the speed of the impulse decreases✓✓		(2)
	2.3.4	- The speed of the impulse will decrease✓ - resulting in it taking longer for impulses to reach the effectors✓ - and the person will react more slowly✓		(3) **(9)**
2.4	2.4.1	(a) F✓ - Auditory nerve✓		(2)
		(b) G✓ - Eustachian tube✓		(2)
	2.4.2	(a) B✓ and C✓ **(Mark first TWO only)**		(2)
		(b) E✓ and F✓ **(Mark first TWO only)**		(2)
	2.4.3	- Grommets✓ will be inserted in the tympanic membrane - Antibiotics✓ **(Mark first ONE only)**	Any	(1)
	2.4.4	Auditory canal✓		(1)
	2.4.5	- The ear wax can be removed✓ from the auditory canal - to allow sound to reach the tympanic membrane✓/which will allow the tympanic membrane to vibrate freely		(2) **(12)** **[40]**

QUESTION 3

3.1 3.1.1 (a) Testis✓ (1)

(b) Epididymis✓ (1)

(c) Scrotum✓ (1)

3.1.2
- Under the influence of testosterone✓
- diploid cells✓/germinal epithelium
- in the seminiferous tubules✓ of the testis
- undergo meiosis✓
- to form (haploid) sperm✓ Any (4)

3.1.3
- The testes will be away from the body✓
- The temperature of the testes will therefore be lower than body temperature✓/less pressure on the testes
- for successful sperm production✓

OR

- Tight underwear will pull the testes close to the body✓
- The temperature of the testes will be too high✓/higher pressure on the testes
- and sperm will not mature✓/sperm production is negatively affected (3)

3.1.4 (a)
- There will be no sperm in the semen✓
- therefore no fertilisation can take place✓ (2)

(b)
- The fluid part of the semen will still be produced✓
- by the accessory glands✓/seminal vesicles/prostate gland/ Cowper's glands (2)

(14)

3.2 3.2.1
- All people✓
- should have enough food✓
- The food should be nutritious✓/of good quality
- and be accessible at all times✓ Any (3)

3.2.2
- Use fertilisers✓
- Monoculture✓
- Use pesticides✓/example
- Improved irrigation✓
- Crop rotation✓
- Artificial selection✓

(Mark first TWO only) Any (2)

3.2.3 2 500✓ (1)

3.2.4
- Crops were destroyed by insects✓
- which led to a lower yield✓/added expenses for insecticides
- and resulted in lower profits✓ (3)

(9)

3.3	3.3.1	- A✓ - B✓ - E✓ **(Mark first TWO only)**	Any	(2)
	3.3.2	- The scar tissue✓ - may partially block the Fallopian tube✓ - preventing the embryo from reaching the uterus✓/resulting in implantation in the Fallopian tube		(3)
	3.3.3	- The other Fallopian tube is still present✓/not blocked - Fertilisation may still take place in this Fallopian tube✓/the developing embryo can move along this Fallopian tube OR - During invitro fertilisation✓ (IVF) - the resulting embryo is inserted into the uterus✓ OR - The ovum can be placed after the blockage✓ - allowing fertilisation✓		(2)
	3.3.4	- Insufficient space✓ - Poor/no placental development✓ - Decreased blood supply✓ - Insufficient nutrients✓/oxygen **(Mark first TWO only)**	Any	(2) **(9)**
3.4	3.4.1	- Biological control✓/example - Mechanical control✓/example - Chemical control✓/example **(Mark first TWO only)**	Any	(2)
	3.4.2	- The alien plants block out sunlight✓ - Water plants below the surface stop photosynthesising✓/die - and less oxygen is released into the water✓ - Other organisms die✓/decay - polluting the water✓	Any	(4)
	3.4.3	- The parts of the plants that photosynthesise are above the water✓ - therefore the oxygen from photosynthesis is released into the air✓/not into the water		(2) **(8)** **[40]**

TOTAL SECTION B: 80

QUESTION 4

Reflex arc (A)

- The receptor receives the stimulus✓ and
- converts it into an impulse✓
- which is transmitted by the sensory neuron✓
- through the dorsal root✓
- of spinal nerve✓
- to the spinal cord✓
- where the impulse is transferred via the interneuron✓
- to the motor neuron✓
- which carries the impulse via the ventral root✓
- to the effector✓/muscle/gland
- The impulse is transferred from one neuron to the next via a synapse✓ Any (8)

Role of the endocrine system in providing energy (E)

- More adrenalin✓ is secreted
- by the adrenal glands✓
- increases blood glucose✓/increase heart rate/ increase breathing rate/dilate blood vessels to essential organs

- More glucagon✓ is secreted
- by the pancreas✓/islets of Langerhans
- increases blood glucose✓

- More TSH✓ is secreted
- by the pituitary gland✓
- to increase thyroxin production✓

- More thyroxin✓is secreted
- by the thyroid gland✓
- to increase the body's metabolic rate✓/rate of respiration Any (9)

Content: (17)
Synthesis: (3)
(20)

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance	**Logical sequence**	**Comprehensive**
All information provided is relevant to the question	Ideas arranged in a logical/ cause-effect sequence	Answered all aspects required by the essay in sufficient detail
All the information provided is relevant to: - Reflex arc - Role of the endocrine system in providing energy There is no irrelevant information	All the information regarding the: - Reflex arc - Role of the endocrine system in providing energy is arranged in a logical manner.	At least the following points should be included: - Reflex arc (**A**) (5/8) - Role of the endocrine system in providing energy(**E**) (6/9)
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150