basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 8 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	B✓✓		
	1.1.2	B✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	B✓✓		
	1.1.6	A✓✓		
	1.1.7	B✓✓		
	1.1.8	B✓✓		
	1.1.9	C✓✓	(9 x 2)	**(18)**
1.2	1.2.1	Round window✓/ Fenestra rotunda		
	1.2.2	Acrosome✓		
	1.2.3	Fallopian tube✓		
	1.2.4	Astigmatism✓		
	1.2.5	Optic✓ nerve		
	1.2.6	Alzheimer's✓ disease		
	1.2.7	Endometrium✓		
	1.2.8	Blastula✓/blastocyst		
	1.2.9	Puberty✓		
	1.2.10	Binocular✓ /stereoscopic vision	(10 x 1)	**(10)**
1.3	1.3.1	A only✓✓		
	1.3.2	B only✓✓		
	1.3.3	B only✓✓	(3 x 2)	**(6)**
1.4	1.4.1	(a) Accommodation✓		(1)
		(b) Pupillary mechanism✓/Pupillary reflex		(1)
	1.4.2	(a) B✓and D✓ **(Mark first TWO only)**		(2)
		(b) A✓ and B✓ **(Mark first TWO only)**		(2)
	1.4.3	(a) C✓and D✓ **(Mark first TWO only)**		(2)
		(b) A✓ and C✓ **(Mark first TWO only)**		(2) **(10)**
1.5	1.5.1	(a) Myelin sheath✓		(1)
		(b) Axon✓		(1)
	1.5.2	(a) A✓		(1)
		(b) C✓		(1)
	1.5.3	D✓ Synapse✓		(2) **(6)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 Cerebellum✓ (1)

2.1.2
- Higher thought processes✓/(intelligence/memory/reasoning)
- Interpretation of all senses✓
- Controls all voluntary actions✓ Any (2)

(Mark first TWO only)

2.1.3 (a) Growth hormone✓/GH (1)

(b) Prolactin✓ (1)

2.1.4
- Meninges✓
- Cranium✓ Any (1)

(Mark first ONE only)

2.1.5
- It receives✓/ interprets impulses
- from receptors✓ in the skin and
- sends impulses to the blood vessels of the skin✓/ influences blood flow to the skin and (4)
- the sweat glands✓/influences sweat secretion

2.1.6 (a) Carotid artery✓ (1)

(b) Heart✓ muscle
- Diaphragm✓
- Intercostal muscles✓ /Breathing muscles✓ Any (2)

(Mark first TWO only) **(13)**

2.2 2.2.1 Vas deferens✓ (1)

2.2.2
- Sperm storage✓
- Sperm maturation✓ Any (1)

(Mark first ONE only)

2.2.3
- The semen will not contain sperm✓ because
- they are not transported✓
- but will contain all other secretions of the accessory glands✓/ examples thereof
- the vasectomy occurred before✓ the accessory glands Any (3)

2.2.4
- The temperature of the testes inside the body will be too high✓
- No/abnormal sperm will be produced✓
- The man will be infertile✓/not able to reproduce (3)

2.2.5
- Under the influence of testosterone✓
- diploid cells✓/germinal epithelial cells
- in the seminiferous tubules✓/testes
- undergo meiosis✓
- to form haploid sperm cells✓ Any (4)

(12)

2.3 **Protection**

- The (amniotic) egg is retained inside the mother's body✓*
- to protect the embryo from predators✓
- The allantois✓ protects the embryo
- by removing waste products✓
- The embryo is protected from shocks✓/sudden changes in temperature/dehydration by the:
  - Chorion✓
  - Amnion✓
  - Amniotic fluid✓ inside the amniotic membrane
  - Shell✓/outer covering
  - Air pocket✓

Compulsory 1* + Any 4 — 5

Nourishment (N)

- The embryo receives nutrients✓
- from the egg yolk✓ in the yolk sac
- and from the albumen✓

Any 2 — 2

(7)

2.4 2.4.1 71.53 – 34.72✓ = 36.81✓ml/h (2)

2.4.2
- The high level of ADH✓ at night
- Increases the permeability of the renal tubules✓/collecting duct/distal convoluted tubules in the kidney
- More water is re-absorbed✓/less water is excreted
- Less urine is produced✓ (4)

2.4.3
- Less urine produced✓/more water is retained
- A person will not need to urinate often✓/ will not be thirsty/ sleep will not be interrupted (2)

2.4.4
- Water will not be reabsorbed from the renal tubules✓
- The volume of water in the blood will be low✓
- The pituitary gland will be stimulated✓
- to release more ADH✓ all the time

Any (3)

(11)

2.5 2.5.1
- Caffeine✓
- Nicotine✓ (2)

(Mark first TWO only)

2.5.2
- The bitter taste✓ will prevent herbivores✓ from feeding on them
- The caffeine will kill pathogenic fungi✓protecting the plants from disease✓/death

Any (2 x 2) (4)

(Mark first TWO only)

2.5.3 Thorns✓ (1)

(Mark first ONE only)

(7)
[50]

QUESTION 3

3.1
- Auxins move away from light✓
- There is a higher concentration of auxins on the dark side of the stem✓
- Growth is stimulated✓ on the dark side which
- grows faster✓
- causing the stem to grow/bend towards the light✓ **(5)**

3.2 3.2.1
- Must have regular menstrual cycles✓
- They must not become pregnant✓
- Diet Any (2)

(Mark first TWO only)

3.2.2
- 250 females per group were used✓/1000 females participated
- Measurement was done for 5 cycles✓ (2)

(Mark first TWO only)

3.2.3 Older groups of women have a higher (average) FSH level than the younger groups✓✓

OR

Younger groups of women have a lower (average) FSH level than the older groups✓✓ (2)

(Mark first ONE only)

3.2.4
- The Graafian/developing follicles secretes oestrogen✓
- but since the number of follicles are low✓/depleted
- less/no oestrogen will be secreted✓

(3)

3.2.5
- A high concentration of progesterone✓
- inhibits the pituitary gland✓/results in reduced FSH secretion
- This will decrease the validity of the investigation✓ Any (3)

(12)

3.3
- After implantation the chorion✓
- develops many finger-like outgrowths✓
- called chorionic villi✓
- The endometrium✓
- together with the chorionic villi forms the placenta✓
- The umbilical artery✓
- and the umbilical vein✓develops
- inside a hollow tube✓
- to form the umbilical cord between the foetus and the placenta✓ Any **(6)**

3.4 3.4.1 (a) Auditory canal✓ (1)

(b) Ossicles✓ (1)

	3.4.2	- Collects the sound waves✓ - Directs the sound waves towards the auditory canal✓ **(Mark first ONE only)**	Any	(1)
	3.4.3	- Part D/the ossicles do not vibrate freely✓ - Fewer/no vibrations will be sent to the oval window✓/inner ear - Fewer/no pressure waves will be set up in the cochlea✓ - The receptors/organ of Corti will be stimulated less✓/not stimulated - The cerebrum is stimulated differently✓/not stimulated - which leads to hearing loss✓	Any	(4)
	3.4.4	- It equalises pressure✓ - on either side of the tympanic membrane✓		(2)
	3.4.5	Grommet✓		(1)
	3.4.6	C✓		(1)
	3.4.7	- The cristae are stimulated✓ - to convert the stimuli to impulses✓ - The impulses are sent to the cerebellum✓ - where they are interpreted✓ - The cerebellum sends impulses to the skeletal muscles✓ to maintain balance	Any	(4) **(15)**
3.5	3.5.1	Islets of Langerhans✓		(1)
	3.5.2	(a) - Type I✓ - No insulin will be produced✓ - The presence of GAD-antibodies indicates that pancreas cells are being destroyed✓		(3)
		(b) - Type I✓ - A lower than normal C-peptide level indicates that the insulin producing cells of the pancreas was destroyed✓ - therefore no insulin will be produced✓		(3)
	3.5.3	- The insulin levels will remain high✓ because - the blood glucose levels remain high✓ - the pancreas will continue secreting insulin✓		(3)
	3.5.4	- The glucose cannot be absorbed into the cells✓ - therefore it cannot be used in cellular respiration✓/ to release energy		(2) **(12)** **[50]**

TOTAL SECTION B: 100
GRAND TOTAL: 150

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