basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P1

NOVEMBER 2022

MARKING GUIDELINES

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 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 marking guidelines**
No changes must be made to the marking guidelines without consulting the provincial internal moderator 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	C✓✓		
	1.1.2	A✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	D✓✓		
	1.1.6	B✓✓		
	1.1.7	D✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	D✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Cranium✓		
	1.2.2	Thermoregulation✓		
	1.2.3	Cataract✓		
	1.2.4	Umbilical artery✓		
	1.2.5	Hypothalamus✓		
	1.2.6	Peripheral✓ nervous system		
	1.2.7	Chorionic villi✓		
	1.2.8	Aldosterone✓		
	1.2.9	Amniotic✓ fluid		
	1.2.10	Fovea centralis✓/ yellow spot	(10 x 1)	**(10)**
1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	**(6)**
	1.4.1	(a) B✓ - Iris✓		(2)
		(b) A✓ - Sclera✓		(2)
	1.4.2	(a) 2✓		(1)
		(b) 3✓		(1)
	1.4.3	(a) Circular✓ muscles		(1)
		(b) Circular✓ muscles		(1)
				(8)
1.5	1.5.1	Negative feedback✓ mechanism		(1)
	1.5.2	(a) Thyroid✓		(1)
		(b) TSH✓/thyroid stimulating hormone		(1)
		(c) Thyroxin✓		(1)
	1.5.3	Goitre✓		(1)
	1.5.4	Hormone A✓		(1)
				(6)
			TOTAL SECTION A:	**50**

SECTION B

QUESTION 2

2.1 2.1.1 Seminal vesicle✓ (1)

2.1.2 Transports semen out of the body✓ (1)
(Mark first ONE only)

2.1.3
- Transports its secretions in ducts✓/ secretion not directly in blood (2)
- Does not produce a hormone✓

(Mark first TWO only)

2.1.4 (1)
Spermatogenesis✓

2.1.5
- The secretion is alkaline ✓
  to neutralise the acidity of the vagina✓/ urethra
- The secretion contains nutrients✓
  for the sperm to generate energy for movement✓
- The secretion is a fluid✓/mucus
  which facilitates the movement of the sperm cells✓ Any (2 x 2) (4)

(9)

2.2 2.2.1 Acrosome✓ (1)

2.2.2
- Fuses with the nucleus of the ovum✓
- Carries genetic material✓ Any (1)

2.2.3
- Produce energy✓/ site for cellular respiration
- which is needed for movement✓ of the sperm (2)

2.2.4
- The oval/torpedo-shaped head✓
- will facilitate faster movement✓
- The presence of an acrosome✓/part **A**
- enables the sperm to penetrate the ovum✓
- A longer tail✓
- ensures faster movement✓ Any (2 x 2) (4)

(Mark first TWO only) **(8)**

2.3 2.3.1
- Stimulates ovulation✓
- Stimulates the development of the corpus luteum✓

(Mark the first TWO only) (2)

2.3.2 (a)
- FSH✓/a high concentration of hormone A
- will stimulate follicles to develop✓
- Therefore, ova will be produced✓ increasing the chances to fall pregnant (3)

(b)
- A peak in hormone B✓/LH
- will indicate that ovulation is about to happen✓
- therefore, an ovum will be available for fertilisation✓ Any (2)

2.3.3
- The levels will remain low✓ because
- the high progesterone levels✓ during pregnancy
- will inhibit the secretion of FSH✓ /hormone A (3)

(10)

2.4
- The Graafian follicle✓
- secretes oestrogen✓
- causing the endometrium to become thicker✓/more glandular or vascular
- The corpus luteum✓
- secretes progesterone✓
- which (further) increases the thickness of the endometrium✓
- High levels of progesterone inhibit FSH secretion✓ Any **(5)**

2.5 2.5.1 External✓ fertilisation (1)

2.5.2
- Their embryos develop inside eggs✓ that are
- outside the body of the female✓ (2)

2.5.3
- The males release semen all around the female✓
- A large number of gametes/ ova are produced✓ (2)

2.5.4 Graph X✓ (1)

2.5.5
- They will have a higher number of surviving embryos✓/eggs/offspring
- Because their fertilised eggs are attached to the vegetation✓
- where they are protected from predators✓/washing away (3)

(9)

2.6 2.6.1 (a) Pancreas✓ /Islets of Langerhans (1)

(b) Glucagon✓ (1)

2.6.2 (a)
- The blood glucose levels will remain high✓
- because the cells will not be able to absorb glucose✓ from the blood
- excess glucose cannot be converted to glycogen by the liver✓/ muscles (3)

(b) Diabetes✓mellitus (1)

2.6.3
- Adrenalin stimulates the liver✓
- to convert glycogen to glucose✓
- to increase the blood glucose levels✓ (3)

(9)
[50]

QUESTION 3

3.1 3.1.1 Corpus callosum✓ (1)

3.1.2 - It controls vital processes✓/heartbeat/breathing
- which will stop✓ when it is damaged (2)

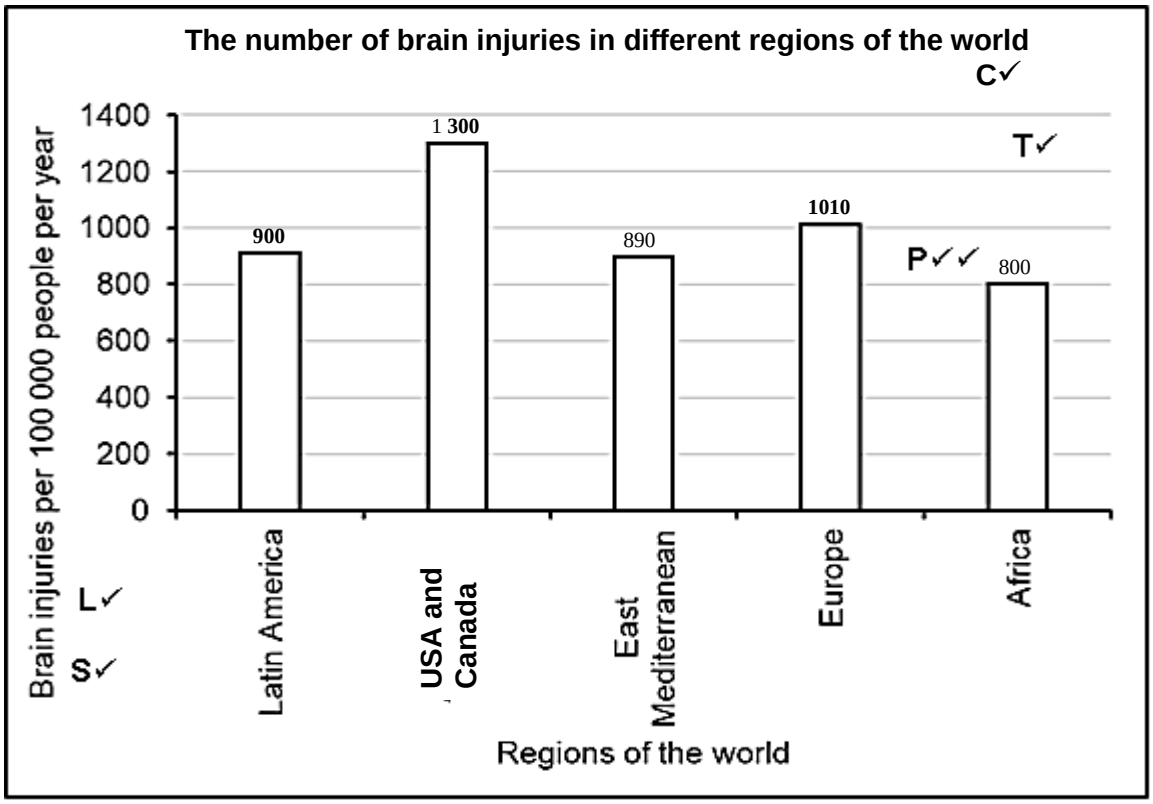
3.1.3 (a) Spinal cord✓ (1)

(b) - The impulses from the cerebrum✓
- are not transmitted✓ to the skeletal muscles (2)
(6)

3.2 3.2.1 Africa✓ (1)

3.2.2 - Not all brain injuries are recorded✓
- due to poor health facilities✓ (2)

3.2.3



Criteria for marking graph:

Criteria	Mark allocation
Bar graph is drawn (T)	1
Caption of the graph includes both variables (C)	1
Correct labels on X-axis and Y-axis (L)	1
Correct scale for Y-axis Equal spaces between bars and equal width of bars for X-axis (S)	1
Plotting: (P) 1-4 co-ordinates plotted correctly All 5 co-ordinates plotted correctly	 1 2

(6)
(9)

3.3 3.3.1 Cochlea✓ (1)

3.3.2 (a) Absorbs excess pressure waves✓/releases pressure from the inner ear/ prevents an echo (1)
(Mark first ONE only)

(b) It converts stimuli/pressure waves into impulses✓ (1)
(Mark first ONE only)

3.3.3
- Part A/tympanic membrane will not be able to vibrate✓/vibrate freely
- No/less vibrations will be carried to the middle ear✓/ossicles (2)

3.3.4
- Middle ear infections cause fluid build-up in the middle ear✓
- which can block the Eustachian tube✓
- The grommet will release the pressure✓ that will build up in the middle ear/ drain the fluid from the middle ear
- The pressure on either side of the tympanic membrane is equalised✓
- preventing the tympanic membrane from rupturing✓ and
- allowing the ossicles to vibrate freely✓ Any (4)

3.3.5
- The cristae are stimulated✓ and
- convert the stimuli into impulses✓
- The impulses are sent via the auditory nerve✓
- to the cerebellum✓
- which interprets the information✓ and
- sends impulses to the skeletal muscles✓ to restore balance

Any (4)
(13)

3.4 3.4.1 (a) Wearing of a facemask✓ (1)

(b) Carbon dioxide levels in blood✓ (1)

3.4.2
- Age✓
- Healthy✓ individuals (2)

(Mark first TWO only)

3.4.3 150 volunteers were used✓ (1)
(Mark first ONE only)

3.4.4
- To allow the carbon dioxide levels in the blood to go back to normal✓
- so that each phase will have the same carbon dioxide level as a starting point✓ (2)

3.4.5
- To act as a control ✓/baseline
- To see if it is the facemask that affects the carbon dioxide levels and not the physical activity✓ Any (1)

3.4.6
- Receptors in the carotid artery are stimulated✓ and
- impulses are sent to the medulla oblongata✓
- The medulla oblongata stimulates the heart✓
- to beat faster✓ causing
- more carbon dioxide to be taken to the lungs✓
- The breathing muscles✓/intercostal muscles and diaphragm
- contract more actively✓ and
- the rate/ depth of breathing increases✓
- More carbon dioxide is exhaled✓
- The carbon dioxide level in the blood decreases✓ /returns to normal

Any (7)
(15)

3.5 3.5.1
- (Apical) tip of the stem✓ /apical bud
- (Apical) tip of the root✓

(2)
(Mark first TWO only)

3.5.2
- Stimulate cell division✓/mitosis
- Stimulate cell elongation✓

(2)
(Mark first TWO only)

3.5.3 Gibberellins✓ (1)
(Mark first ONE only)

3.5.4
- Increased plant growth✓
- saves species that are facing extinction✓

(2)
(7)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150