basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

2023

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 9 pages.

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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.

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SECTION A

QUESTION 1

1.1	1.1.1	D✓✓		
	1.1.2	B✓✓		
	1.1.3	A✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	A✓✓		
	1.1.7	C✓✓		
	1.1.8	B✓✓		
	1.1.9	C✓✓		
	1.1.10	B✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Homeostasis✓		
	1.2.2	Mitochondria✓		
	1.2.3	Alzheimer's✓ disease /dementia		
	1.2.4	Choroid✓		
	1.2.5	Precocial✓ development		
	1.2.6	Islets of Langerhans✓		
	1.2.7	Acrosome✓		
	1.2.8	Umbilical artery✓	(8 x 1)	**(8)**
1.3	1.3.1	Both A and B✓✓		
	1.3.2	None✓✓		
	1.3.3	B only✓✓	(3 x 2)	**(6)**
1.4	1.4.1	(a) Peripheral✓ nervous system		(1)
		(b) Autonomic nervous system✓		(1)
	1.4.2	Spinal✓ nerves		(1)
	1.4.3	E✓ - Parasympathetic nervous system✓		(2)
	1.4.4	Neurons✓		(1)
	1.4.5	- Meninges✓ - Cranium✓/bone tissue - Cerebrospinal fluid✓ **(Mark first TWO only)**	Any	(2) **(8)**
1.5	1.5.1	Semi-circular canals✓		(1)
	1.5.2	Ossicles✓		(1)
	1.5.3	(a) D✓ - Eustachian tube✓		(2)
		(b) C✓ - Oval window✓		(2)
	1.5.4	(a) Maculae✓		(1)
		(b) Cristae✓		(1) **(8)**

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1.1 Endometrium✓ (1)

2.1.2 Fertilisation✓ (1)

2.1.3 The (nucleus of the) sperm fuses with (the nucleus of) the ovum✓ (1)

2.1.4
- Zygote divides by mitosis✓
- to form a (solid) ball of cells✓
- called the morula✓
- which develops into a hollow ball of cells✓
- called the blastula✓/blastocyst Any (4)

2.1.5
- It is muscular✓
  to protect the foetus from mechanical injury✓/to allow for parturition/birth
- It is flexible✓/can expand
  to accommodate the growing foetus✓
- It is hollow✓
  to accommodate the growing foetus✓
- The thickened endometrium✓
  allows for implantation✓ /survival of the embryo

(Mark first TWO only) Any (2 x 2) (4)

2.1.6
- The secretion is alkaline✓ which
- neutralises the acidic conditions✓ of the vagina (2)

(13)

2.2 2.2.1
- Stimulates the development of ovarian follicles✓
- Initiates puberty✓ Any (1)

(Mark first ONE only)

2.2.2 - LH✓/Luteinising Hormone (1)

2.2.3
- LH stimulates ovulation✓
- therefore, ovulation will not take place✓
- There will be no ovum to fertilise✓ Any (2)

2.2.4
- A Graafian follicle is not formed✓
- Since the Graafian follicle secretes oestrogen✓
- oestrogen levels will be reduced✓ therefore
- the endometrium will not develop✓/ thicken
- and no implantation can take place✓

OR

- There is no ovum produced✓/a Graafian follicle is not formed
- Ovulation does not occur✓
- No fertilisation✓ occurs and
- a zygote is not formed✓
- and no implantation can take place✓ (5)

(9)

2.3
- Under the influence of testosterone✓
- diploid cells✓/germinal epithelium cells
- in the seminiferous tubules✓of the testis
- undergo meiosis✓ to form
- haploid sperm✓ Any **(4)**

2.4 2.4.1 External✓ fertilisation (1)

2.4.2
- To increase the chances of fertilisation✓
- since the gametes may be lost✓/not reach one another due to predation✓/water currents

OR

- To produce more zygotes✓/offspring
- since many will be lost✓
- because they are preyed on✓/washed away/dry out (3)

2.4.3 The embryos develop inside an egg, outside the female's body✓ (1)
(5)

2.5 2.5.1
- It has a duct✓
- The secretion is released externally✓/not released into blood
- It secretes sweat✓/It does not secrete a hormone Any (2)

(Mark first TWO only)

2.5.2
- They receive stimuli✓ from the environment
- and convert them to nerve impulses✓ (2)

2.5.3
- More blood flows to the surface of the skin✓ to allow more heat to be lost✓

OR

- More blood flows to the sweat glands✓ to increase the production of sweat✓ (2)

(6)

2.6 2.6.1 Cochlea✓ (1)

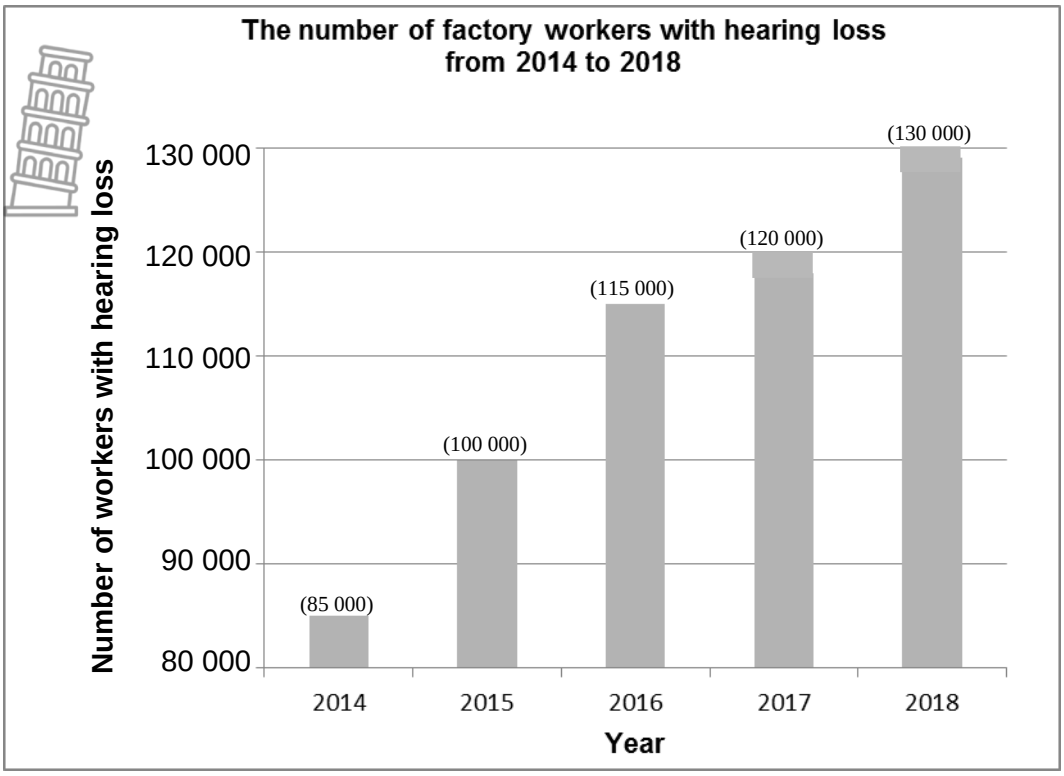
2.6.2 $\left[\frac{(130\,000 - 85\,000)}{85\,000}\right]$✓ x 100✓ = 52,94✓% (3)

2.6.3
- More factories✓ were built increase in supply & demand
- More workers✓ were employed
- Extended exposure to loud sounds✓
- Lack of precautionary measures✓ Any (1)

(Mark first ONE only)

2.6.4
- The impulse will not be transmitted to the cerebrum✓
- and will not be interpreted✓ (2)

2.6.5



Criteria for marking graph:

Criteria	Mark allocation
Type: 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 width of bars and spaces (S)	1
Plotting: (P) 1- 4 co-ordinates are plotted correctly All 5 co-ordinates are plotted correctly	1 2

(6)
(13)
[50]

Histogram or line graph drawn
- Lose marks for type of graph and for scale

Transposed axes:
- Can get full credit if axes labels are also swapped and bars are horizontal
- If labels are *not* corresponding, then lose marks for labels and scale
- Check that the plotting is correct for the given labels

QUESTION 3

3.1 3.1.1 November✓ (1)

3.1.2
- The concentration of abscisic acid increases✓
- To stimulate the abscission✓/falling of leaves
- To prepare the tree for dormancy✓ (3)

3.1.3
- Less sunlight✓/ less water/ cold conditions therefore
- Decreased photosynthesis✓/ reduced transpiration/ lower energy demand/ low growth rate Any (1 x 2) (2)

(Mark first ONE only)

(6)

3.2 3.2.1
- Auxins promote the development of roots✓
- It brings about (general) root growth✓ causing their downward✓growth/positive geotropism (3)

3.2.2
- In the stem, the auxins stimulate growth✓ on the lower side causing the stem to grow/bend upwards✓
- In the root, the auxins inhibit growth✓ on the lower side causing the root to grow/bend downwards✓ (4)

(7)

3.3 3.3.1 Adrenal✓ gland (1)

3.3.2 (a) Aldosterone level✓/ increased aldosterone level (1)

(b) Blood pressure✓ (1)

3.3.3
- 1 688 volunteers were used✓
- The procedure was done 4 times for each individual✓ (2)

(Mark first TWO only)

3.3.4
- All factors should be kept constant✓/there should be only one independent variable to ensure the validity✓ of the investigation
- Dietary factors✓/examples can also influence the blood pressure✓ (2 x 2) (4)

(Mark first TWO only)

3.3.5 To compare the blood pressure before and after the administration of aldosterone✓✓ (2)

3.3.6
- The high aldosterone✓ level
- will increase the permeability of the renal tubules✓ for salt
- More salt will be reabsorbed✓ (3)

(14)

3.4
- Adrenalin causes glycogen to be converted to glucose✓ which
- increases the blood glucose level✓
- The breathing muscles are stimulated✓
- to increase the rate and depth of breathing✓
- The heart muscle is stimulated✓
- to pump faster✓
- There is also an increase in blood pressure✓
- increasing the transport of oxygen and glucose✓
- The rate of cellular respiration is increased✓ Any **(8)**

3.5

3.5.1 Iris✓ (1)

3.5.2
- Helps to maintain the shape of the eye✓
- Plays a role in refraction of light✓
- Allows the transmission of light✓
- Prevents desiccation✓ of structures in the eye
- Holds the retina in position✓
- Nourishment✓ of the eye
- Prevents mechanical injury✓ in the eye (2)

Any
(Mark first TWO only)

3.5.3
- Area B contains (a high concentration of) photoreceptors✓/ cones (2)
- Area C contains no photoreceptors✓/ no rods & cones

3.5.4 (1)

Astigmatism✓

3.5.5
- Because the lens will become cloudy✓/opaque
- no/less light will enter the eye✓ (3)
- causing no sight ✓/weak sight

3.5.6
- The ciliary muscle contracts✓
- The ciliary body moves closer to the lens✓
- The suspensory ligaments slacken✓
- Tension on the lens decreases✓
- The lens becomes more convex✓/rounded
- Light rays are refracted more✓ (6)
- To focus the light on the retina✓ Any **(15)**

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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