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# **basic education**

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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.**

**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	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)	<b>(20)</b>
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)	<b>(8)</b>
1.3	1.3.1	Both A and B✓✓		
	1.3.2	None✓✓		
	1.3.3	B only✓✓	(3 x 2)	<b>(6)</b>
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✓	Any	(2)
		<b>(Mark first TWO only)</b>		<b>(8)</b>
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)
				<b>(8)</b>

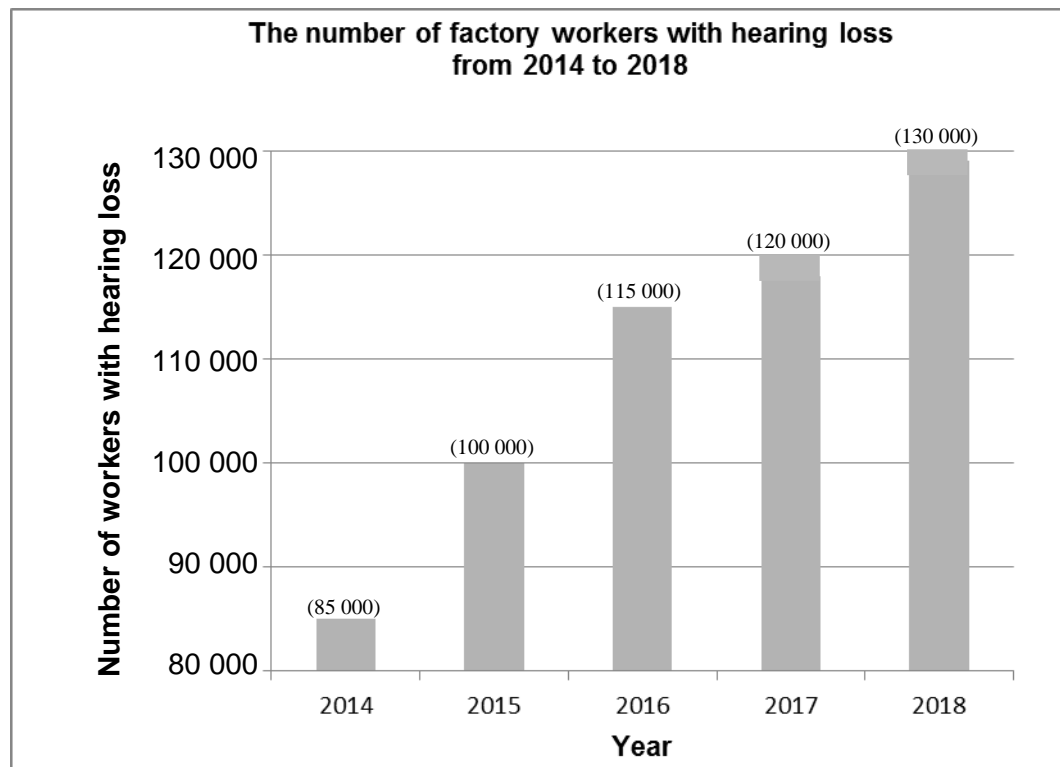
**TOTAL SECTION A: 50**

**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	<ul style="list-style-type: none"> <li>- Zygote divides by mitosis✓</li> <li>- to form a (solid) ball of cells✓</li> <li>- called the morula✓</li> <li>- which develops into a hollow ball of cells✓</li> <li>- called the blastula✓/blastocyst</li> </ul>	Any	(4)
2.1.5	<ul style="list-style-type: none"> <li>- It is muscular✓</li> <li>to protect the foetus from mechanical injury✓/to allow for parturition/birth</li> <li>- It is flexible✓/can expand</li> <li>to accommodate the growing foetus✓</li> <li>- It is hollow✓</li> <li>to accommodate the growing foetus✓</li> <li>- The thickened endometrium✓</li> <li>allows for implantation✓ /survival of the embryo</li> </ul>		
	<b>(Mark first TWO only)</b>	Any (2 x 2)	(4)
2.1.6	<ul style="list-style-type: none"> <li>- The secretion is alkaline✓ which</li> <li>- neutralises the acidic conditions✓ of the vagina</li> </ul>		(2)
			<b>(13)</b>
2.2	2.2.1	<ul style="list-style-type: none"> <li>- Stimulates the development of ovarian follicles✓</li> <li>- Initiates puberty✓</li> </ul>	Any (1)
		<b>(Mark first ONE only)</b>	
2.2.2	- LH✓/Luteinising Hormone		(1)
2.2.3	<ul style="list-style-type: none"> <li>- LH stimulates ovulation✓</li> <li>- therefore, ovulation will not take place✓</li> <li>- There will be no ovum to fertilise✓</li> </ul>	Any	(2)
2.2.4	<ul style="list-style-type: none"> <li>- A Graafian follicle is not formed✓</li> <li>- Since the Graafian follicle secretes oestrogen✓</li> <li>- oestrogen levels will be reduced✓ therefore</li> <li>- the endometrium will not develop✓/ thicken</li> <li>- and no implantation can take place✓</li> </ul>		
	<b>OR</b>		
	<ul style="list-style-type: none"> <li>- There is no ovum produced✓/a Graafian follicle is not formed</li> <li>- Ovulation does not occur✓</li> <li>- No fertilisation✓ occurs and</li> <li>- a zygote is not formed✓</li> <li>- and no implantation can take place✓</li> </ul>		(5)
			<b>(9)</b>

- 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
- $$\left[ \frac{(130\,000 - 85\,000)}{85\,000} \right] \times 100 = 52,94\%$$
- (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	1
All 5 co-ordinates are plotted correctly	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 | <ul style="list-style-type: none"> <li>- The concentration of abscisic acid increases✓</li> <li>- To stimulate the abscission✓/falling of leaves</li> <li>- To prepare the tree for dormancy✓</li> </ul>   |             | (3)         |
|     | 3.1.3 | <ul style="list-style-type: none"> <li>- Less sunlight✓/ less water/ cold conditions therefore</li> <li>- Decreased photosynthesis✓/ reduced transpiration/ lower energy demand/ low growth rate</li> </ul>  | Any (1 x 2) | (2)         |
|     |       | <b>(Mark first ONE only)</b>   |             | <b>(6)</b>  |
| 3.2 | 3.2.1 | <ul style="list-style-type: none"> <li>- Auxins promote the development of roots✓</li> <li>- It brings about (general) root growth✓ causing their downward✓growth/positive geotropism</li> </ul>   |             | (3)         |
|     | 3.2.2 | <ul style="list-style-type: none"> <li>- In the stem, the auxins stimulate growth✓ on the lower side causing the stem to grow/bend upwards✓</li> <li>- In the root, the auxins inhibit growth✓ on the lower side causing the root to grow/bend downwards✓</li> </ul> |             | (4)         |
|     |       |  |             | <b>(7)</b>  |
| 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 | <ul style="list-style-type: none"> <li>- 1 688 volunteers were used✓</li> <li>- The procedure was done 4 times for each individual✓</li> </ul>   |             | (2)         |
|     |       | <b>(Mark first TWO only)</b>   |             |             |
|     | 3.3.4 | <ul style="list-style-type: none"> <li>- All factors should be kept constant✓/there should be only one independent variable to ensure the validity✓ of the investigation</li> <li>- Dietary factors✓/examples can also influence the blood pressure✓</li> </ul>      | (2 x 2)     | (4)         |
|     |       | <b>(Mark first TWO only)</b>   |             |             |
|     | 3.3.5 | To compare the blood pressure before and after the administration of aldosterone✓✓   |             | (2)         |
|     | 3.3.6 | <ul style="list-style-type: none"> <li>- The high aldosterone✓ level</li> <li>- will increase the permeability of the renal tubules✓ for salt</li> <li>- More salt will be reabsorbed✓</li> </ul>  |             | (3)         |
|     |       |  |             | <b>(14)</b> |

3.4	<ul style="list-style-type: none"> <li>- Adrenalin causes glycogen to be converted to glucose✓ which</li> <li>- increases the blood glucose level✓</li> <li>- The breathing muscles are stimulated✓</li> <li>- to increase the rate and depth of breathing✓</li> <li>- The heart muscle is stimulated✓</li> <li>- to pump faster✓</li> <li>- There is also an increase in blood pressure✓</li> <li>- increasing the transport of oxygen and glucose✓</li> <li>- The rate of cellular respiration is increased✓</li> </ul>	Any	<b>(8)</b>
3.5	3.5.1 Iris✓		(1)
	3.5.2 <ul style="list-style-type: none"> <li>- Helps to maintain the shape of the eye✓</li> <li>- Plays a role in refraction of light✓</li> <li>- Allows the transmission of light✓</li> <li>- Prevents desiccation✓ of structures in the eye</li> <li>- Holds the retina in position✓</li> <li>- Nourishment✓ of the eye</li> <li>- Prevents mechanical injury✓ in the eye</li> </ul> Any <b>(Mark first TWO only)</b>		(2)
	3.5.3 <ul style="list-style-type: none"> <li>- Area B contains (a high concentration of) photoreceptors✓/ cones</li> <li>- Area C contains no photoreceptors✓/ no rods &amp; cones</li> </ul>		(2)
	3.5.4 Astigmatism✓		(1)
	3.5.5 <ul style="list-style-type: none"> <li>- Because the lens will become cloudy✓/opaque</li> <li>- no/less light will enter the eye✓</li> <li>- causing no sight ✓/weak sight</li> </ul>		(3)
	3.5.6 <ul style="list-style-type: none"> <li>- The ciliary muscle contracts✓</li> <li>- The ciliary body moves closer to the lens✓</li> <li>- The suspensory ligaments slacken✓</li> <li>- Tension on the lens decreases✓</li> <li>- The lens becomes more convex✓/rounded</li> <li>- Light rays are refracted more✓</li> <li>- To focus the light on the retina✓</li> </ul> Any		(6) <b>(15)</b> <b>[50]</b>
<b>TOTAL SECTION B:</b>			<b>100</b>
<b>GRAND TOTAL:</b>			<b>150</b>