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# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## NATIONAL SENIOR CERTIFICATE

**GRADE 12**

**LIFE SCIENCES P1**

**NOVEMBER 2019**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 11 pages +  
the master for the transparency to mark Question 2.3.5**

**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**

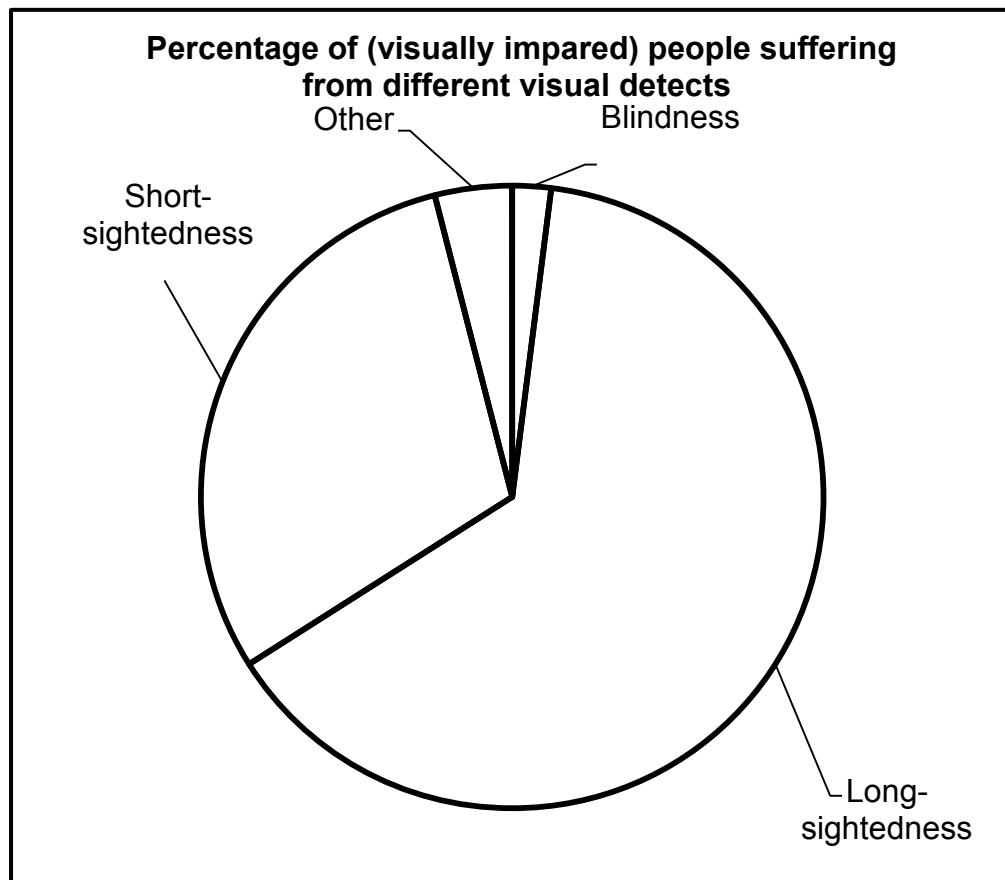
1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	C✓✓		
	1.1.4	A✓✓		
	1.1.5	B✓✓		
	1.1.6	C✓✓		
	1.1.7	A✓✓		
	1.1.8	B✓✓		
	1.1.9	A✓✓		
	1.1.10	D✓✓	(10 x 2)	<b>(20)</b>
1.2	1.2.1	Chorionic villi✓		
	1.2.2	Cytokinesis✓		
	1.2.3	Invasive alien✓/Invasive exotic		
	1.2.4	Vagina✓		
	1.2.5	Deforestation✓		
	1.2.6	Prolactin✓		
	1.2.7	Gestation✓		
	1.2.8	Fallopian tubes✓/Oviducts		
	1.2.9	Puberty✓		<b>(9)</b>
1.3	1.3.1	A only✓✓		
	1.3.2	A only✓✓		
	1.3.3	B only✓✓	(3 x 2)	<b>(6)</b>
1.4	1.4.1	(a) Jelly layer✓/Zona pellucida		(1)
		(b) Cytoplasm✓/cytosol		(1)
		(c) Acrosome✓		(1)
	1.4.2	Oogenesis✓		(1)
	1.4.3	D✓		(1)
	1.4.4	E✓		
		F✓		(2)
		<b>(Mark first TWO only)</b>		<b>(7)</b>
1.5	1.5.1	(a) Spinal cord✓		(1)
		(b) Corpus callosum✓		(1)
	1.5.2	(a) D✓ Cerebrum✓		(2)
		(b) B✓ Medulla oblongata✓		(2)
		(c) E✓ Cerebellum✓		(2)
				<b>(8)</b>

**TOTAL SECTION A: 50**

**SECTION B****QUESTION 2**

- |     |       |   |                   |
|-----|-------|---|-------------------|
| 2.1 | 2.1.1 | (a) Centromere✓   | (1)               |
|     |       | (b) Homologous chromosomes✓   | (1)               |
|     |       | (c) Spindle fibre✓/spindle threads  | (1)               |
|     | 2.1.2 | Anaphase II✓  | (1)               |
|     | 2.1.3 | 2, 1, 3✓✓   | (2)               |
|     | 2.1.4 | In metaphase I, the chromosomes arrange at the equator in homologous pairs✓ whereas in metaphase II, the chromosomes arrange at the equator singly✓<br><b>(Mark first ONE only)</b>   | (2)<br><b>(8)</b> |
| 2.2 | 2.2.1 | Eggs are retained/hatch in the female body and the young are born live✓✓  | (2)               |
|     | 2.2.2 | 2✓<br><b>(Mark first ONE only)</b>  | (1)               |
|     | 2.2.3 | - The egg has the highest yolk✓/energy content<br>- that will allow maximum development before hatching✓  | (2)               |
|     | 2.2.4 | 1✓<br><b>(Mark first ONE only)</b>  | (1)<br><b>(6)</b> |
| 2.3 | 2.3.1 | Long-sightedness✓   | (1)               |
|     | 2.3.2 | (a) - The lens becomes opaque✓/milky/cloudy<br>- and therefore does not allow the light to pass through✓  | (2)               |
|     |       | (b) Surgery✓<br><b>(Mark first ONE only)</b>  | (1)               |
|     | 2.3.3 | - The lens is less convex✓/the eye ball is too short/cornea is flat<br>- This causes the light rays to fall behind the retina✓<br>- A biconvex lens increases the refractive power✓<br>- Therefore light rays are focussed on the retina✓ to form a clear image | (4)               |
|     | 2.3.4 | Astigmatism✓  | (1)               |

## 2.3.5

**Calculations:**

Blindness:  $2/100 \times 360^\circ = 7,2^\circ$   
 Short-sightedness:  $30/100 \times 360^\circ = 108^\circ$   
 Long-sightedness:  $64/100 \times 360^\circ = 230,4^\circ$   
 Other:  $4/100 \times 360^\circ = 14,4^\circ$

**Criteria for assessing the graph:**

Pie chart drawn (T)	1
Title of the graph shows the relationship between the two variables (H)	1
Correct calculations to determine the proportions (C)	2: All 4 correct 1: 1-3 correct
Correct proportions for the labelled sectors (P) (To be checked using prepared transparency – see Annexure A – Page 12)	2: All 4 sectors correct 1: 1-2 sectors correct

(6)  
(15)

- |     |       |   |                        |
|-----|-------|---|------------------------|
| 2.4 | 2.4.1 | <ul style="list-style-type: none"> <li>- The high levels of progesterone✓in the pills</li> <li>- will inhibit the secretion of FSH✓from the pituitary gland</li> <li>- No follicle will develop✓</li> <li>- and hence no oestrogen will be secreted✓</li> </ul> | (4)                    |
|     | 2.4.2 | <ul style="list-style-type: none"> <li>- The increase in the progesterone level✓</li> <li>- indicates that corpus luteum has been formed✓</li> </ul>  | (2)                    |
|     | 2.4.3 | <ul style="list-style-type: none"> <li>- Women will stay in the habit of taking a pill every day✓/will not forget to take the progesterone containing pills</li> <li>- To allow menstruation to occur✓</li> </ul>   | Any (1)                |
|     |       | <b>(Mark first ONE only)</b>  | <b>(7)</b>             |
| 2.5 |       | <ul style="list-style-type: none"> <li>- Zygote divides by mitosis✓</li> <li>- to form a ball of cells✓</li> <li>- called the morula✓</li> <li>- which further divides to form a hollow ball of cells✓</li> <li>- called the blastula✓/blastocyst</li> </ul>    | Any (4)<br><b>[40]</b> |



**QUESTION 3**

- 3.1 3.1.1 (a) ADH✓/antidiuretic hormone/vasopressin (1)
- (b) Aldosterone✓ (1)
- 3.1.2 Adrenal✓gland (1)
- 3.1.3 3✓ (1)
- 3.1.4
- The blood will have a high salt content✓
  - and therefore less/no aldosterone will be secreted✓
  - resulting in less salt reabsorbed into the blood✓/more salt excreted in the urine
  - The blood will have less water than normal✓
  - and therefore more ADH will be secreted✓
  - making the kidney tubules more permeable✓
  - resulting in more water reabsorbed into the blood✓/less water will leave the body with the urine
- Any (5)
- (9)**
- 3.2 3.2.1 Islets of Langerhans✓/pancreas (1)
- 3.2.2 Adrenalin✓ (1)
- 3.2.3 Same:
- Type of food given✓
  - Concentration of adrenalin✓
  - Amount of adrenalin✓
  - Measuring tools used✓
  - Person measuring the glucose concentrations✓
  - Levels of activity✓
  - Age of patients✓
  - Body mass of patients✓
  - Health condition of patients✓
- (Mark first THREE only)** Any (3)
- 3.2.4
- Provides a baseline✓/starting level/point of reference/control
  - to compare with the effect of injecting adrenalin✓
- (2)
- 3.2.5
- Hormones are proteins✓
  - and will therefore be digested✓/denatured making it ineffective

**OR**

- Since it enters the blood directly✓
  - it will reach the target organs faster✓
- (2)





**SECTION C****QUESTION 4****Plant's response to gravity (P)**

When a plant is placed horizontally:

- auxins✓
- are attracted by gravity✓

**Root**

- There is a high concentration of auxins on the lower side of the root✓
- which inhibits growth/cell elongation/cell division on the lower side✓
- There is a low concentration of auxins on the upper side of the root✓
- which stimulates growth/cell elongation/cell division on the upper side✓
- The upper side of the root grows faster✓/Uneven growth occurs
- causing the root to grow/bend downwards✓
- The root grows towards gravity✓/The root is positively geotropic

**Stem**

- There is a high concentration of auxins on the lower side of the stem✓
- which stimulates growth/cell elongation/cell division on the lower side✓
- There is a low concentration of auxins on the upper side of the stem✓
- which inhibits growth/cell elongation/cell division on the upper side✓
- The lower side of the stem grows faster✓/Uneven growth occurs
- causing the stem to grow/bend upwards✓
- The stem grows away from gravity✓/The stem is negatively geotropic

(11)

**Maintaining balance (B)**

When the position of the head changes, the maculae:

- are stimulated✓
- The stimulus is converted to an impulse✓
- which is transmitted by the auditory nerve✓
- to the cerebellum✓
- where the impulse is interpreted✓
- The cerebellum sends impulses to the muscles✓
- and balance is restored✓

Any (6)

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 information is relevant to the: <ul style="list-style-type: none"> <li>- Plant response to gravity</li> <li>- Maintenance of balance</li> </ul> There is no irrelevant information	The sequence of events in the: <ul style="list-style-type: none"> <li>- Plant response to gravity</li> <li>- Maintenance of balance</li> </ul> are in a logical sequence	The following must be included: <ul style="list-style-type: none"> <li>- Plant response to gravity (<b>P</b>) (7/11)</li> <li>- Maintaining balance (<b>B</b>) (4/6)</li> </ul>
1 mark	1 mark	1 mark

**TOTAL SECTION C: 20****GRAND TOTAL: 150**

**Annexure A** – Master for transparency to mark Question 2.3.5

