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# basic education

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

## SENIOR CERTIFICATE EXAMINATIONS

**LIFE SCIENCES P1**

**2018**

**FINAL MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 11 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	C✓✓		
	1.1.4	A✓✓		
	1.1.5	C✓✓		
	1.1.6	D✓✓		
	1.1.7	C✓✓		
	1.1.8	B✓✓		
	1.1.9	B✓✓	(9 x 2)	<b>(18)</b>
1.2	1.2.1	Endocrine✓		
	1.2.2	Monoculture✓		
	1.2.3	Spermatogenesis✓		
	1.2.4	Prolactin✓		
	1.2.5	Thorns✓		
	1.2.6	Carbon footprint✓		
	1.2.7	Tropism✓		<b>(7)</b>
1.3	1.3.1	Both A and B✓✓		
	1.3.2	A only✓✓		
	1.3.3	B only✓✓	(3 x 2)	<b>(6)</b>
1.4	1.4.1	Reflex arc✓		<b>(1)</b>
	1.4.2	(a) B - Motor✓ neuron/multipolar neuron/efferent neuron		<b>(1)</b>
		(b) C - Interneuron✓/connector neuron		<b>(1)</b>
		(c) E - Sensory✓ neuron/unipolar neuron/afferent neuron		<b>(1)</b>
	1.4.3	(a) F✓		<b>(1)</b>
		(b) A✓		<b>(1)</b>
	1.4.4	(a) D✓ - Synapse✓		<b>(2)</b>
		(b) G✓ - Myelin sheath✓		<b>(2)</b>
				<b>(10)</b>

1.5	1.5.1	Anaphase II✓	(1)
	1.5.2	(a) Centriole✓	(1)
		(b) Centromere✓	(1)
		(c) Spindle fibre✓	(1)
	1.5.3	The chromatids separate✓/centromere splits	(1)
	1.5.4	Crossing over✓	(1)
	1.5.5	Reduces genetic variation✓	(1)
	1.5.6	(a) Four✓/4	(1)
		(b) 23✓	(1)
			<b>(9)</b>
		<b>TOTAL SECTION A:</b>	<b>50</b>

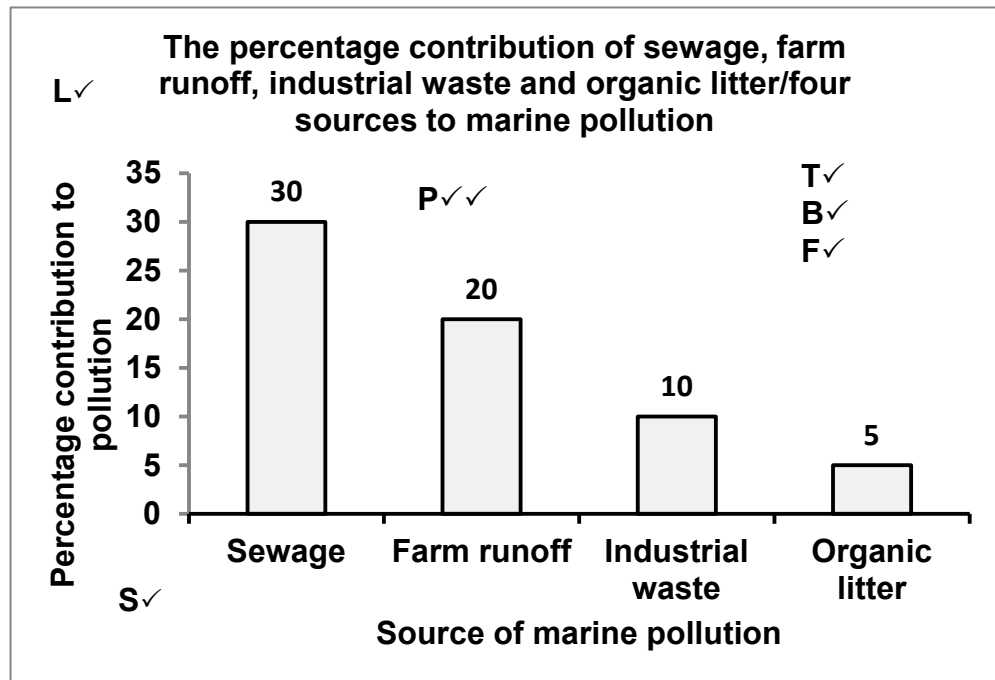
**SECTION B****QUESTION 2**

- 2.1 2.1.1 - Corpus luteum✓  
- Placenta✓ (2)  
**(Mark first TWO only)**
- 2.1.2 Progesterone levels are increasing✓ (1)
- 2.1.3 - High levels of progesterone✓  
- inhibits/causes a decrease in the secretion of FSH✓ (2)
- 2.1.4 To prevent the growth of a new follicle✓/ovulation during the pregnancy (1)
- 2.1.5  $39,5 - 21,6✓ = 17,9$   
 $\frac{17,9}{21,6} \times 100✓ = 82,87✓/82,9/83%$  (3)
- 2.1.6 (a) - The endometrium/uterine lining/placenta will not be maintained✓  
- Menstruation will begin✓/the placenta will detach/ she will have a miscarriage (2)
- (b) Give the woman progesterone supplements✓ (1)  
**(12)**
- 2.2 2.2.1 Methane✓/CH<sub>4</sub> (1)
- 2.2.2 Used as a fuel✓/cooking/heating/light/electricity  
**(Mark first ONE only)** Any (1)
- 2.2.3 - Reduce pests✓/rats/flies  
- Reduce bad smells✓/pollution  
- To promote decomposition✓  
**(Mark first ONE only)** Any (1)
- 2.2.4 It is full✓/It has reached ground level  
**(Mark first ONE only)** (1)
- 2.2.5 (a) - Golf course✓  
- Recreational park✓  
- Car park✓  
- Forestry✓  
**(Mark first TWO only)** Any (2)
- (b) - Reuse✓ waste materials  
- Recycle✓ waste materials  
- Reduce the amount of waste produced✓  
- Manufacture more products that can be recycled✓  
**(Mark first TWO only)** Any (2)  
**(8)**

2.3	2.3.1	(a) Cerebellum✓		(1)
		(b) Cerebrum✓		(1)
	2.3.2	Organ of Corti✓		(1)
	2.3.3	- The semi-circular canals/part <b>A</b> contain fluid✓ /endolymph which moves when the person moves✓ - There are cristae✓/receptors present which convert the stimulus to an impulse✓/are sensitive to the movement of the fluid - The canals lie on three different planes✓ to detect movement in any direction✓		
		<b>(Mark first TWO only)</b>	Any 2 x 2	(4) <b>(7)</b>
2.4	2.4.1	(a) Choroid✓		(1)
		(b) Sclera✓		(1)
	2.4.2	- The person cannot see✓/is blind in that eye/has no binocular vision - because the impulses from the retina cannot be transmitted to the cerebrum✓ from one eye		(2)
	2.4.3	- The circular muscles of part A/the iris contract✓ - and the radial muscles relax✓ - making the pupil smaller✓/constricting the pupil - so that less light enters the eye✓		(4)
	2.4.4	(a) - Accommodation will not occur✓ - The refractive power of the lens is low✓/lens cannot become more convex - and light rays are not refracted/bent enough✓ - and would not be focussed onto the retina✓/would be focussed behind the retina/a clear image would not be formed on the retina - Therefore the person cannot focus on objects that are closer than 6m✓/the person can only focus on distant objects	Any	(4)
		(b) Convex✓/biconvex		(1)
				<b>(13)</b>
				<b>[40]</b>

**QUESTION 3**

3.1 3.1.1



**Mark allocation of the graph**

Criteria	Mark Allocation
Title of graph (T) including both variables	1
Bar graph drawn (B)	1
Correct scale for X-axis (equal width and spacing of the bars) and Y-axis (S)	1
Correct label and unit for X-axis and Y-axis (L)	1
Only the correct four bars have been plotted (F)	1
Plotting of the bars (P)	0: No bars plotted correctly 1: 1 to 3 bars plotted correctly 2: All 4 bars plotted correctly

**NOTE:**

If a line graph is drawn – marks will be awarded for the 'title and label for X and Y axes' only

If a histogram is drawn – marks will be lost for the 'type of graph and correct scale' only

(7)

- 3.1.2
- The sewage/organic litter contains nutrients✓
  - The amount of nutrients in the water increases✓/eutrophication occurs
  - causing an algal bloom✓
  - The algae cover the surface of the water✓/blocks out sunlight
  - causing water plants to die✓
  - thereby reducing photosynthesis✓
  - and increasing decomposition✓ thus reducing the oxygen content of the water
- Any (4)  
**(11)**
- 3.2      3.2.1      Adrenalin✓ (1)
- 3.2.2
- Increases the heart rate✓
  - Increases blood pressure✓
  - Stimulates the conversion of glycogen into glucose✓
  - Increases the blood supply to the heart✓/skeletal muscles
  - Decreases blood flow to the digestive system✓
  - Decreases blood flow to the skin✓
  - Increases muscle tone✓
  - Increases the rate/depth of breathing✓
  - Increases the rate of respiration✓/metabolism
  - Dilates/increases the diameter of the pupils✓
- Any (3)  
**(4)**
- 3.3
- Blood glucose levels rise✓ above normal
  - The pancreas✓/islets of Langerhans
  - secretes insulin✓ into the blood
  - which travels to the liver✓/muscle cells
  - and stimulates them to absorb glucose✓ from the blood
  - and to convert the excess glucose into glycogen✓
  - which decreases the blood glucose levels✓ to normal
- Any **(5)**
- 3.4      3.4.1      (a) Volume of urine✓ (1)
- (b)
- Decide on a time✓/date/place to conduct the investigation
  - Decide on the apparatus✓/materials that need to be used
  - Decide how to record the data✓
  - Decide on the number of participants to include✓
  - Decide what factors to keep constant✓/example of factor to be kept constant
  - Decide on the composition of the sample✓
  - Develop an indemnity form for the participants to sign✓
  - Recruit✓/get permission from volunteers to participate
- Any **(2)**

- (c) - The same room✓/environment/temperature  
 - The same apparatus✓  
 - The same investigator✓  
 - No other liquid intake by both groups✓  
 - Same type of beer✓  
**(Mark first TWO only)** Any (2)
- (d) - They used a large sample✓/12 men/6 men in each group  
 - The average volume of urine produced was calculated✓ (2)  
**(Mark first TWO only)**

- 3.4.2 - Alcohol inhibits/reduces the secretion of ADH✓  
 - causing the renal tubules✓/distal convoluted tubules and collecting ducts  
 - to become less permeable to water✓  
 - Less water is reabsorbed✓ back into the blood  
 - A larger volume of urine is produced✓ Any (4)  
**(11)**

3.5 3.5.1 To ensure unilateral light✓/the plant receives light from one direction only (1)

3.5.2 Auxins✓/IAA/indole acetic acid (1)

3.5.3 Differences between plants A and B after two weeks

T✓

Plant A	Plant B
The stem of the plant will bend towards the light✓	The stem of the plant will remain straight✓/will not bend towards the light
Does not have lateral branches✓/only lower lateral branches will start to grow	All the lateral branches will grow✓along the whole stem
The plant will be taller✓	The plant will be shorter✓

**(Mark first TWO only)** 1 table (T) + (2 x 2) (5)

- 3.5.4 - The gibberellins cause the stem/plant to grow longer✓/taller  
 - because gibberellins stimulate the elongation/growth of the internodes✓ (2)  
**(9)**  
**[40]**

**TOTAL SECTION B: 80**

**SECTION C****QUESTION 4****Gaseous exchange in amniotic eggs (A)**

- Gases move by diffusion✓
- into and out of the egg✓
- through the porous shell✓/allantois/chorion

**Nourishment of the embryo in amniotic eggs**

- The egg contains yolk✓/albumin
- which provide nutrients✓ to the embryo

Max (4)

**Gaseous exchange and nourishment of the foetus in humans (F)**

- In the placenta✓
- the mothers blood comes into close contact with the foetal blood✓
- Oxygen✓
- and nutrients✓
- diffuse from the mothers blood into the foetal blood✓
- in the umbilical veins✓
- This nutrient rich blood is carried to the foetus through the umbilical cord✓
- Carbon dioxide diffuses from the foetal blood✓
- in the umbilical artery✓
- into the maternal blood✓

Max (7)

**Protection of the foetus in humans (P)**

- The foetus develops inside the uterus✓
- and is protected by the mothers body✓
- Antibodies from the mothers blood✓
- pass into the foetus' blood and provide immunity✓
- The placenta acts as a microfilter✓
- preventing toxins from the mother entering the foetal blood✓
- The foetus is enclosed in the amnion✓
- which contains amniotic fluid✓
- The amniotic fluid provides protection against dehydration✓
- and acts as a shock absorber✓
- It provides a suitable temperature✓ for the developing embryo

Max (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 the information provided is relevant to: - Gaseous exchange and nourishment in amniotic eggs - Gaseous exchange, nourishment and protection in the human foetus There is no irrelevant information	All the information regarding the: - Gaseous exchange and nourishment in amniotic eggs - Gaseous exchange, nourishment and protection in the human foetus is arranged in a logical manner.	At least the following points should be included: - Gaseous exchange and nourishment in amniotic eggs <b>(2/4)</b> - Gaseous exchange and nourishment in the human foetus <b>(5/7)</b> - Protection in the human foetus <b>(4/6)</b>
1 mark	1 mark	1 mark

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