



# basic education

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

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**LIFE SCIENCES P2**

**VERSION 1 (NEW CONTENT) FOR FULL-TIME CANDIDATES**

**FEBRUARY/MARCH 2013**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 9 pages.**

**PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2013**

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 part of it is required**  
Read all and credit relevant part.
4. **If comparisons are asked for and descriptions are given**  
Accept if 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 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, provided it does not mean something else in Life Sciences or if it is out of context.
13. **If common names given in terminology**  
Accept, provided it was accepted at the national memo discussion meeting.

14. **If only letter is asked for and only name is given (and vice versa)**  
No credit.
15. **If units are not given in measurements**  
Memorandum will allocate marks for units separately, except where it is already given in the question.
16. Be sensitive to **the sense of an answer, which may be stated in a different way.**
17. **Caption**  
Credit will be given for captions to all illustrations (diagrams, graphs, tables, etc.).
18. **Code-switching of official languages (terms and concepts)**  
A single word or two that appears 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. No changes must be made to the marking memoranda. In exceptional cases, the Provincial Internal Moderator will consult with the National Internal Moderator (and the External Moderator if necessary).
20. 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 in the training of markers and in the marking.

**SECTION A****QUESTION 1**

1.1	1.1.1	B✓✓		
	1.1.2	D✓✓		
	1.1.3	B✓✓		
	1.1.4	B✓✓		
	1.1.5	B✓✓		
	1.1.6	C✓✓		
	1.1.7	C✓✓		
	1.1.8	A✓✓		
	1.1.9	B✓✓		
	1.1.10	D✓✓	(10 x 2)	<b>(20)</b>
1.2	1.2.1	Pioneer✓ community/pioneers		
	1.2.2	Altricial✓ development		
	1.2.3	Metamorphosis✓		
	1.2.4	Ecosystem✓		
	1.2.5	Resource partitioning✓		
	1.2.6	Mutualism✓		
	1.2.7	Carrying capacity✓		
	1.2.8	Geotropism✓		<b>(8)</b>
1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	None✓✓		
	1.3.4	B only✓✓		
	1.3.5	Both A & B✓✓		
	1.3.6	Both A & B ✓✓		
	1.3.7	B only✓✓	(7 x 2)	<b>(14)</b>
1.4	1.4.1	C✓ – Endometrium✓		(2)
	1.4.2	D✓ – Vagina✓		(2)
	1.4.3	A✓ – Fallopian tube✓		(2)
	1.4.4	B✓ – Ovary✓		(2)
				<b>(8)</b>

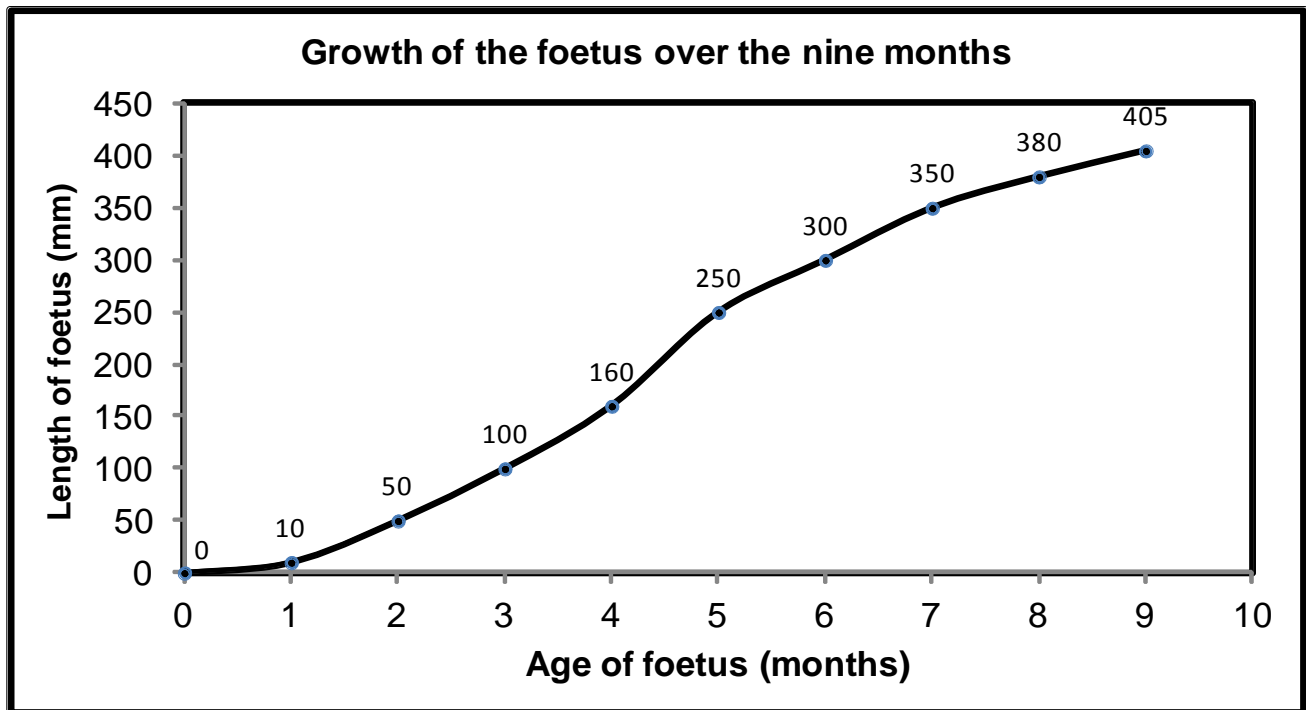
**TOTAL SECTION A: 50**

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

2.1 2.1.1 4 and 5✓✓

(2)

2.1.2

**Mark allocation for the graph**

Correct type of graph	1
Title of graph	1
Correct label and scale for X-axis	1
Correct label and scale for Y-axis	1
Plotting of points	1 – 1 to 4 points plotted correctly 2 – 5 to 8 points plotted correctly 3 – all 9 points plotted correctly

**NOTE:**

If the wrong type of graph is drawn:

- Marks will be lost for 'correct type of graph'

If axes are transposed:

- Marks will be lost for labelling and scaling of X-axis and Y-axis (7)

2.1.3 The length of the foetus increases✓ with age✓ (2)

2.1.4 Control the temperature changes✓  
Prevents drying out/dehydration of the foetus✓  
Allows free movement ✓  
Acts as shock absorber✓ (Any TWO) (2)

2.1.5 Labour✓ (1)

- The uterine muscles✓
- contract and relax ✓ pushing the baby forward
- Cervix dilates✓ (Any 2) (3)

**(16)**

- 2.2      2.2.1      To give their 3 children good quality of life✓/affordability reasons/  
economic reasons  
**Mark first ONE only** (Any ONE) (1)
- 2.2.2      Condom✓  
Femidom✓  
Intra-uterine device✓/IUD  
Diaphragm✓  
Cervical cap✓  
**Mark first TWO only** (Any TWO) (2)  
**(3)**
- 2.3      2.3.1      (a) Insulin✓  
(b) Glucagon✓ (2)
- 2.3.2      In the first hour✓ after eating  
the glucose level increased✓  
The hormone insulin✓ was then secreted  
to convert the excess glucose to glycogen✓  
which resulted in the glucose level dropping✓  
in the second hour✓ (Any FOUR) (4)  
**(6)**
- 2.4      2.4.1      (a) Semicircular canals✓ (1)  
(b) Eustachian tube ✓ (1)
- 2.4.2      Bones✓ (1)
- 2.4.3      Tympanic membrane will not be able to vibrate✓ to send sound  
waves to the middle ear✓ resulting in  
Deafness✓/hearing impeded (Any TWO) (2)  
**(5)**  
**[30]**

**QUESTION 3**

- 3.1      3.1.1      Reduces variation in population✓ and  
species might not survive✓ if environmental conditions  
change  
**Mark first ONE only** (1 x 2) (2)
- 3.1.2      The workers become specialised✓/adapted to carry out  
its role most efficiently✓  
**Mark first ONE only** (1 x 2) (2)  
**(4)**
- 3.2      3.2.1       $P = \frac{50 \times 120}{12}$ ✓  
  
= 500✓mice (3)

3.2.2	- The capturing process must not harm the organism✓ - The marking process must not harm the organism✓ - The mark must be visible for the entire period✓ <b>Mark first TWO only</b>	(Any TWO)	(2)
3.2.3	- Immigration/emigration occurred✓ - Tagged mice eaten by predators✓/death - Mice already tagged avoided recapture✓ - New offspring produced✓ - Only one sample was taken✓ <b>Mark first TWO only</b>	(Any TWO)	(2) <b>(7)</b>
3.3	3.3.1 Female✓		(1)
	3.3.2 25–29✓		(1)
	3.3.3 B✓		(1)
	3.3.4 - High birth rate✓ - Life expectancy✓ low/fewer people reach old age <b>Mark first TWO only</b>		(2) <b>(5)</b>
3.4	3.4.1 (a) Increasing✓ (b) Decreasing✓		(1) (1)
	3.4.2 - Better medicines✓/healthcare help fight disease - Clean water supplies and better sewage disposal slow the spread of disease✓ - Modern farming methods in some countries produce more food✓ - Better lifestyle✓ <b>Mark first THREE only</b>	(Any THREE)	(3)
	3.4.3 - Fewer people will earn money and pay taxes✓ - More people will require pensions✓ - More people will require extra health care✓ <b>Mark first TWO only</b>	(Any TWO)	(2) <b>(7)</b>
3.5	3.5.1 (a) C✓ (b) A✓ (c) B✓		(1) (1) (1)
	3.5.2 - There will be an increase in the number of herbivores✓ - leading to increased competition✓ for limited resources - This could lead to environmental degradation✓ - which causes a rapid decrease in the carrying capacity✓ - This could lead to an earlier decrease✓ in the rabbit population - due to death✓/emigration	(Any TWO)	(4) <b>(7)</b> <b>[30]</b> <b>60</b>
<b>TOTAL SECTION B:</b>			

[30]

## SECTION C

### QUESTION 4

- |     |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                 |                    |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 4.1 | 4.1.1                                                                                                                                                                                                                                                                                           | (a) Curvature✓ of the lens of the eye                                                                                                                                                                                           | (1)                |
|     |                                                                                                                                                                                                                                                                                                 | (b) Distance✓ of the pencil from the eye                                                                                                                                                                                        | (1)                |
|     | 4.1.2                                                                                                                                                                                                                                                                                           | Amount of light✓<br>Time✓ to focus on the pencil<br>Use the same pencil✓<br>Same eye✓<br><b>Mark first TWO only</b>                                                                                                             | (Any TWO) (2)      |
|     | 4.1.3                                                                                                                                                                                                                                                                                           | -To increase the validity✓ of the procedure✓<br>-To get valid results✓ for the factor being tested✓<br>-To get results for the factor that is being tested✓ so the above factors do not interfere with the factor being tested✓ | (Any 1 x 2) (2)    |
|     | 4.1.4                                                                                                                                                                                                                                                                                           | The curvature of the lens of the eye decreases✓ as the pencil moves further away✓ from the eye<br>Further than 150 cm no changes in the thickness✓                                                                              | (3)                |
|     | 4.1.5                                                                                                                                                                                                                                                                                           | Ciliary muscles✓<br>Suspensory ligaments✓<br><b>Mark first TWO only</b>                                                                                                                                                         | (2)<br><b>(11)</b> |
| 4.2 | 4.2.1                                                                                                                                                                                                                                                                                           | A✓                                                                                                                                                                                                                              | (1)                |
|     | 4.2.2                                                                                                                                                                                                                                                                                           | Prey population size must always be greater✓ than predator population size✓ in a balanced ecosystem                                                                                                                             | (2)                |
|     | 4.2.3                                                                                                                                                                                                                                                                                           | - They are in a predator-prey relationship✓<br>- If the number of predators increases✓,<br>- the number of prey decreases✓                                                                                                      | (3)                |
|     | 4.2.4                                                                                                                                                                                                                                                                                           | - By increasing the beetle population✓,<br>- the number of green blowflies decreases✓<br>- because beetle feed on green blowflies✓ and this will decrease the diseases in cattle                                                | (3)<br><b>(9)</b>  |
| 4.3 | The pituitary✓ is sensitive to the concentration of the hormone, thyroxin✓ in the blood✓                                                                                                                                                                                                        |                                                                                                                                                                                                                                 |                    |
|     | When the thyroxin concentration in the blood decreases✓ below the normal level:                                                                                                                                                                                                                 |                                                                                                                                                                                                                                 |                    |
|     | <ul style="list-style-type: none"> <li>• The pituitary is stimulated to secrete more TSH✓</li> <li>• TSH stimulates✓</li> <li>• the thyroid ✓ gland</li> <li>• to secrete more thyroxin✓</li> <li>• Thus increasing the level of thyroxin✓</li> <li>• in the blood to normal levels✓</li> </ul> |                                                                                                                                                                                                                                 |                    |



When the thyroxin concentration in the blood increases✓ above the normal level:

- The pituitary is not stimulated to secrete TSH✓
- There is less stimulation of the thyroid gland to secrete thyroxin✓
- Thus decreasing the level of thyroxin✓ in the blood to normal levels✓

Max (10)

### Consequences of mechanism not working

The concentration of thyroxin will not be regulated✓

(1)

When the thyroxin level increases beyond normal limits✓ it causes

### Hyperthyroidism✓

Hyperthyroidism causes an increase in rate of metabolism✓ resulting in:

- Weight loss✓
- Irritable✓/anxiety
- Hyperactive✓
- Increase in heart rate✓
- Tiredness✓

Thyroid gland swells✓/goitre

Eyeballs protrude✓

Max (3)

When the thyroxin level decreases beyond normal limits✓ it causes

### Hypothyroidism✓

Hypothyroidism causes an decrease in rate of metabolism✓ resulting in:

- Weight gain✓
- Decrease in heart rate✓
- Slow growth of hair and fingernails✓

Max (3)

Content: (17)  
Synthesis: (3)

## ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Description
3	Well structured – demonstrates insight and understanding of question
2	Minor gaps or irrelevant information in the logic and flow of the answers
1	Attempted but with significant gaps and irrelevant information in the logic and flow of the answers
0	Not attempted/nothing written other than question number/no correct information

(20)

**TOTAL SECTION C: 40**  
**GRAND TOTAL: 150**