



# 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**

**NOVEMBER 2012**

**FINAL MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 10 pages.**

## PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2012

**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 is incorrect, do not credit. If sequence and links becomes correct again, resume credit.

**9. Non-recognized 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 recognizable 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**

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 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 without consulting the Provincial Internal Moderator who in turn will consult with the National Internal Moderator (and the External moderators where necessary)**

**20. Only memoranda bearing the signatures of the National Internal Moderator and the UMALUSI moderators and distributed by the National Department of Education via the Provinces must be used.**

## SECTION A

### QUESTION 1

- 1.1      1.1.1      B✓✓  
              1.1.2      D✓✓  
              1.1.3      D✓✓  
              1.1.4      B✓✓  
              1.1.5      C✓✓  
              1.1.6      A✓✓  
              1.1.7      B✓✓/C  
              1.1.8      B✓✓  
              1.1.9      C✓✓  
              1.1.10      No correct answer      (9 x 2)      **(18)**
- 1.2      1.2.1      Fruit✓  
              1.2.2      Altricial✓ development  
              1.2.3      Pioneer✓  
              1.2.4      Ecological footprint✓  
              1.2.5      Dendrites✓  
              1.2.6      Negative feedback✓  
              1.2.7      Diabetes✓mellitus      **(7)**
- 1.3      1.3.1      B only ✓✓  
              1.3.2      B only ✓✓  
              1.3.3      None✓✓  
              1.3.4      Both A and B✓✓  
              1.3.5      B only✓✓  
              1.3.6      A only✓✓  
              1.3.7      None✓✓      (7 x 2)      **(14)**
- 1.4      1.4.1      (a) F✓ testis✓/seminiferous tubules      (2)  
                              (b) C✓ urethra✓      (2)  
                              (c) D✓ epididymis✓      (2)
- 1.4.2      testosterone✓      (1)
- 1.4.3 (a) F✓      (1)
- (b) B✓      (1)
- (9)**

**TOTAL SECTION A: 48**

**Use the following guide to convert the mark out of 48 to a mark out of 50:**

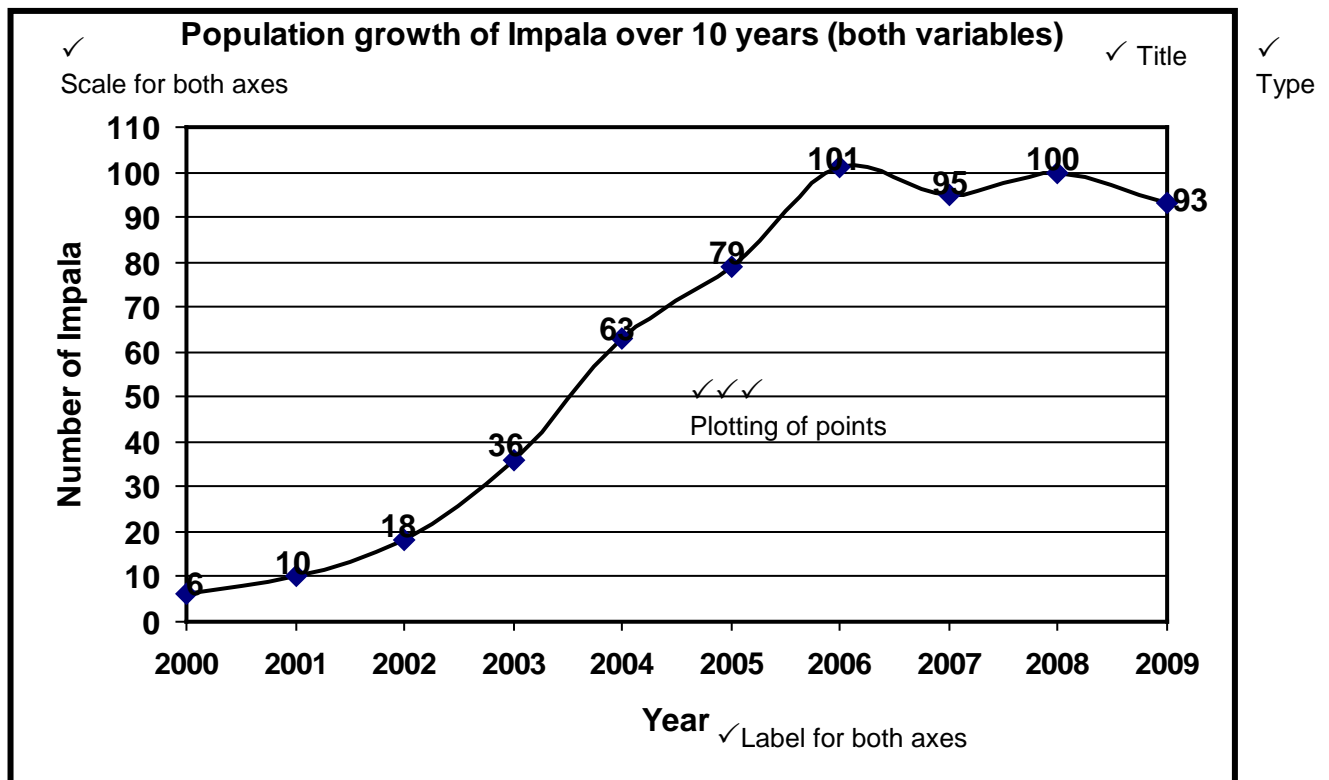
Mark Range	Action Required
Marks from 0 - 11	Leave marks as is
Marks from 12 - 35	add 1 mark
Marks from 36 - 48	add 2 marks





### QUESTION 3

3.1 3.1.1



#### Checklist for the mark allocation of the graph

Correct type of graph with points joined	1
Title of graph (both variables)	1
Correct label for X-axis and Y-axis	1
Appropriate scale for X-axis and Y-axis	1
Plotting of points	1–1 to 4 points plotted correctly 2–5 to 9 points plotted correctly 3–all 10 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 of X-axis and Y-axis

(7)

3.1.2 Logistic✓/sigmoid/S-shaped growth form (1)

3.1.3 Population increases at first✓ and then slows down✓/becomes constant

**OR**

Population stabilises✓/ stationary phase reached when the carrying capacity has been reached✓ any (1 x 2) (2)

3.1.4 Lag✓/establishment phase (1)

3.1.5 Growth was slow✓ since impala first had to acclimatise to the area✓/finding mating partners/ sexually immature/small starting population size (2)

3.1.6 (a) Smaller impala will eat leaves from lower branches✓ and bigger eland, leaves from higher branches✓

**OR**

They feed on the same resource at different heights✓✓ Any (1 x 2) (2)

(b) Resource partitioning✓/spatial partitioning /niche partitioning (1)  
**(16)**

3.2 3.2.1  $(45 - 16) \text{ per } 1\,000 \checkmark = \frac{29}{1\,000} \times 100 \checkmark = 2,9\% \checkmark$  (3)

3.2.2 2240✓ (1)

3.2.3

- Insufficient health care✓ to help fight diseases
- Poor access to health care✓
- Lack of clean water ✓
- Insufficient sewage disposal✓/sanitation/ hygiene increases the spread of diseases
- Poor nutrition✓/poverty
- War✓/violence/crime
- High incidence of diseases✓
- High incidence of accidents✓

**(Mark first THREE only)** any (3)  
**(7)**

3.3 3.3.1 2 ✓ (1)

3.3.2

Pyramid 1	Pyramid 2
1 Life expectancy is low✓	1 Life expectancy is high✓
2 Birth rate is high✓	2 Birth rate is low✓

**(Mark first TWO only)** + ✓ for table 2 x 2 (5)

3.3.3 To plan✓/budget for service delivery (1)  
**(7)**  
**[30]**

**TOTAL SECTION B: 60**



## SECTION C

### QUESTION 4

- 4.1 4.1.1 (a) killing✓/ removing of organisms to reduce habit destruction✓/ overpopulation/prevent spread of disease/ any other acceptable reason (2)
- (b) the **maximum population size**✓ that can be supported over a period of time in a particular habitat✓ (2)
- 4.1.2 (a) Scientist have installed artificial watering points throughout the park✓ causing elephants to be distributed throughout the park,✓ instead of them being confined to where natural water sources (like rivers) were. (2)
- (b) Global warming✓ is also responsible for reducing biodiversity (1)
- 4.1.3 We are playing God ✓ – nature has its own way of regulating the number of elephants when the carrying capacity is reached✓/ environmental resistance increases
- Man has confined the elephants to parks✓ thereby reducing their natural habitat✓
- Morally wrong✓ to kill since the elephants also have a right to live✓/ elephants also have a social structure
- Affect the economy✓ as ecotourism could decrease✓
- There is no evidence✓ that culling is effective in reducing✓ habitat destruction
- Elephants have a good memory✓ therefore when family members are killed they become very aggressive✓ (4)
- (Mark first TWO only)** (2 x 2) **(11)**
- 4.2 4.2.1 Competitive exclusion✓/ interspecific competition (1)
- 4.2.2 When grown alone population size of both species A and B increased greatly✓\*/ to over 100 because there is no competition✓\*
- When the two species are grown together in the same habitat Population size of species A and B increases✓ in the first week✓/ to about 40
- since there was sufficient food✓ for the low population size of both species✓
- As food supply decreased, competition✓ increased
- Thereafter species A outcompeted species B✓
- Resulting in species A increasing✓/ up to 110
- while species B stabilised✓/ remained at 40 and then declined✓
- \* 2 compulsory marks + any 4 others** (6)
- 4.2.3 Species A and B will increase for a longer period✓/ It will take longer for species A to outcompete species B due to no✓/ reduced competition (2)
- (9)**

#### 4.3 Mechanism of reflex action

**Example:** withdrawal of hand after being pricked by a pin✓/from hot surface/  
(any other suitable example)

(1)

- Receptors in the skin✓
- receive the stimulus✓
- Stimulus is converted into a nerve impulse✓
- The impulse travels along the sensory neuron✓
- towards the spinal cord✓
- along the dorsal root✓ of the spinal nerve✓
- In the spinal cord, the sensory neuron makes synaptic contact✓
- with the connector✓/ interneuron
- and then the impulses are transmitted along the motor neuron✓
- along the ventral root✓ of the spinal nerve
- to the effector organ✓/muscle
- which contracts ✓and pulls the hand away✓
- The reflex action provides a quick response to the stimulus so injury is minimised✓

max

(10)

#### Action of adrenalin

**Example:** chased by a ferocious dog✓/(any other suitable example)

(1)

Adrenalin prepares the body to cope with the emergency, danger and stress in the following ways:

- Brain becomes aware of danger✓/emergency situation
- through impulses from the sense organs✓
- Adrenal gland✓ is stimulated to secrete adrenalin
- Messages are then sent to various parts of the body✓ (blood vessels, heart)
- Blood vessels of the skin✓/digestive system constrict✓,
- but the blood vessels to the heart muscles and brain✓  
(important vital organs during an emergency) dilate✓
- The heart rate also increases✓
- Rate and depth of breathing increases✓
- The conversion of glycogen to glucose is promoted✓ in the liver
- Vital organs receive more blood✓/oxygen/glucose
- to raise metabolic activities of cells ✓to release more energy
- muscle tone increases✓
- pupil dilate✓
- to allow a rapid response✓ to ensure safety

max  
Content  
Synthesis

(5)

(17)

(3)

(20)

#### ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Description
3	Well structured – demonstrate 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

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