



# basic education

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

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**LIFE SCIENCES P2**

**NOVEMBER 2013**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 11 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**  
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	D✓✓		
	1.1.2	B✓✓		
	1.1.3	C✓✓		
	1.1.4	C✓✓		
	1.1.5	D✓✓		
	1.1.6	D✓✓		
	1.1.7	C✓✓		
	1.1.8	C✓✓		
	1.1.9	B✓✓		
	1.1.10	B✓✓	(10 x 2)	<b>(20)</b>
1.2	1.2.1	Census✓		
	1.2.2	Carrying capacity✓		
	1.2.3	Community✓		
	1.2.4	Metamorphosis✓		
	1.2.5	Ovule✓		
	1.2.6	Style✓		<b>(6)</b>
1.3	1.3.1	Both A and B✓✓		
	1.3.2	None✓✓		
	1.3.3	B only✓✓		
	1.3.4	B only✓✓		
	1.3.5	B only✓✓		
	1.3.6	B only✓✓		
	1.3.7	A only✓✓	(7 x 2)	<b>(14)</b>
1.4	1.4.1	(a) Equilibrium✓/stationary		(1)
		(b) Accelerating✓/logarithmic/exponential/ geometric		(1)
		(c) Lag✓/establishment		(1)
	1.4.2	Environmental resistance✓/limiting factors		(1)
	1.4.3	Logistic ✓/sigmoid /S-curve		(1)
				<b>(5)</b>
1.5	1.5.1	A✓		(1)
	1.5.2	A✓ /B		(1)
	1.5.3	E✓		(1)
	1.5.4	B✓		(1)
	1.5.5	D✓		(1)
				<b>(5)</b>

**TOTAL SECTION A: 50**

## SECTION B

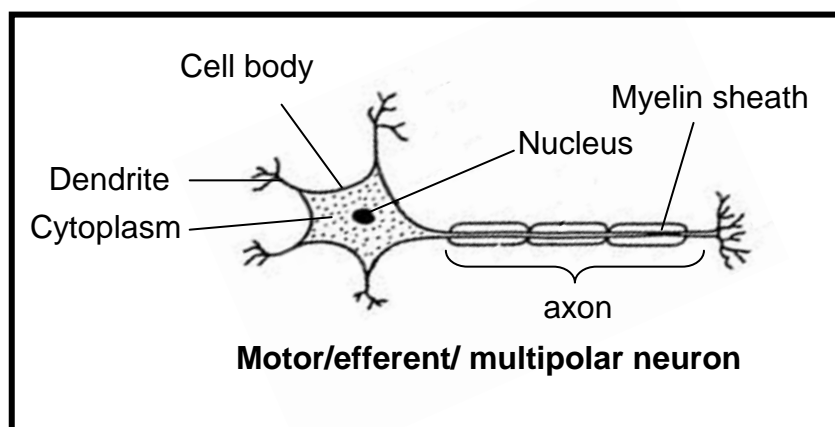
### QUESTION 2

- 2.1 2.1.1 (a) C - Effector✓/muscle  
(b) D - Synapse✓  
(c) E - Spinal cord✓  
(d) F - Connector neuron✓/interneuron  
(e) G - Dorsal root✓/spinal nerve (5)

- 2.1.2 Impulse will not reach the CNS✓/the body will be unaware of the stimulus  
and no reflex action✓  
will occur, causing harm to the body✓ Any (2)

- 2.1.3 Pulling your hand away from a hot object✓/blinking/coughing/  
sneezing//knee-jerk/ any appropriate stimulus and response/  
(swallowing/peristalsis/breathing/heartbeat/dilation and constriction  
of blood vessel/pupillary mechanism/ yawning/salivation)  
**(Mark first TWO only)** Any (2)

2.1.4



#### Mark allocation for diagram:

- Correct caption✓  
Correct type of neuron drawn✓  
Any 3 correct labels✓✓✓

(5)  
**(14)**

- 2.2 2.2.1 Make a decision on:  
- a place to do the investigation✓  
- the time and duration✓  
- the sample size✓  
- where to obtain woodlice✓  
- the apparatus needed✓  
- how to create moist and dry conditions✓  
- factors to keep constant✓/ example  
- the number of times that the investigation should be repeated✓  
- how to record the results✓  
**(Mark first FOUR only)** Any (4)

- 2.2.2 (a) number of wood lice✓ (1)
- (b) amount of moisture✓/(dry and moist conditions) (1)
- 2.2.3 - Light intensity✓/ temperature/ any environmental condition  
 - Size/type of petri dish✓  
 - Size/type of filter paper✓  
 - Size of the woodlice✓  
 - Species of the woodlice✓  
**(Mark first TWO only)** Any (2)  
**(8)**
- 2.3 2.3.1 In **light-adapted** eyes the **cone cells** respond✓ in bright light  
 While in **dark-adapted** eyes the **rod cells** respond✓ in low light conditions  
**OR**  
 In light-adapted eyes the pupil is constricted✓  
 In dark-adapted eyes the pupil is dilated✓ Any 1x2 (2)
- 2.3.2 (a) Light-adapted✓✓ (2)
- (b) Dark-adapted✓✓ (2)
- 2.3.3 Blind spot✓ (1)
- 2.3.4 Rods and cones/photoreceptors are absent✓ at X (1)  
**(8)**  
**[30]**

**QUESTION 3**

- |     |       |  |           |                    |
|-----|-------|--|-----------|--------------------|
| 3.1 | 3.1.1 | A✓   |           | (1)                |
|     | 3.1.2 | High mortality amongst the young people✓✓<br>Low percentage of people towards the end of their lifespan✓✓/Low life expectancy<br><b>(Mark first TWO only)</b>  | 2 x 2     | (4)<br><b>(5)</b>  |
| 3.2 | 3.2.1 | Illegal killing✓/stealing of protected organisms   |           | (1)                |
|     | 3.2.2 | They are sold at very high prices✓/increased demand for rhino horns  |           | (1)                |
|     | 3.2.3 | Medicinal purpose✓/example<br>Making ornaments✓<br>Making an aphrodisiac✓<br><b>(Mark first TWO only)</b>  | Any       | (2)                |
|     | 3.2.4 | Rhino species could become extinct✓<br>thus reducing biodiversity✓<br>upsetting the balance in community structure✓/ food web<br>also affecting tourism✓/economy   | Any       | (2)                |
|     | 3.2.5 | Legalise the selling and exporting of rhino horns✓ thus decreasing its demand✓<br>Removing horns✓ to prevent killing ✓of rhinos<br>Strict penalties✓/imprisonment to discourage✓ illegal poaching<br>Developing new technology✓ to improve monitoring✓<br>Employ more people✓ for stricter monitoring✓/security<br>Inject substances in the horn✓ to decrease its utility value✓<br>Educating✓ people about the importance of conservation✓ of the rhino species<br><b>(Mark first TWO only)</b> | Any 2 x 2 | (4)<br><b>(10)</b> |
| 3.3 | 3.3.1 | Shag will eat prey mostly from the surface ✓/sand eel and herring and cormorant eat prey mostly from the bottom✓/ flat fish and shrimp<br><b>OR</b><br>They feed generally at/on different✓ depths✓/species in the ocean   |           | (2)                |
|     | 3.3.2 | Resource partitioning ✓/spatial partitioning/niche partitioning  |           | (1)                |
|     | 3.3.3 | Space✓ /Nesting area   |           | (1)                |
|     | 3.3.4 | Interspecific✓ competition   |           | (1)<br><b>(5)</b>  |

3.4	3.4.1	Primary✓ succession		(1)
	3.4.2	Lichens colonise a habitat/bare rock for the first time✓		(1)
	3.4.3	Pioneers ✓		(1)
	3.4.4	- Forms a layer of soil✓ - Modifies/improves the environment✓for organisms to follow - Enriches the soil with nutrients and gases✓		
		<b>(Mark first ONE only)</b>	Any	(1) <b>(4)</b>
3.5	3.5.1	The carnivorous fish population will decrease✓ because the herbivore population will decrease✓ as there will be no food✓/ seaweed for the herbivores		(3)
	3.5.2	Chlorine may affect other organisms✓		(1)
	3.5.3	They may not have natural predators✓/ they may feed on the local seaweeds as well Leading to an increase in population size of the sea slugs✓ This could lead to an imbalance in food chains✓	Any	(2) <b>(6)</b> <b>[30]</b>
<b>TOTAL SECTION B:</b>				<b>60</b>

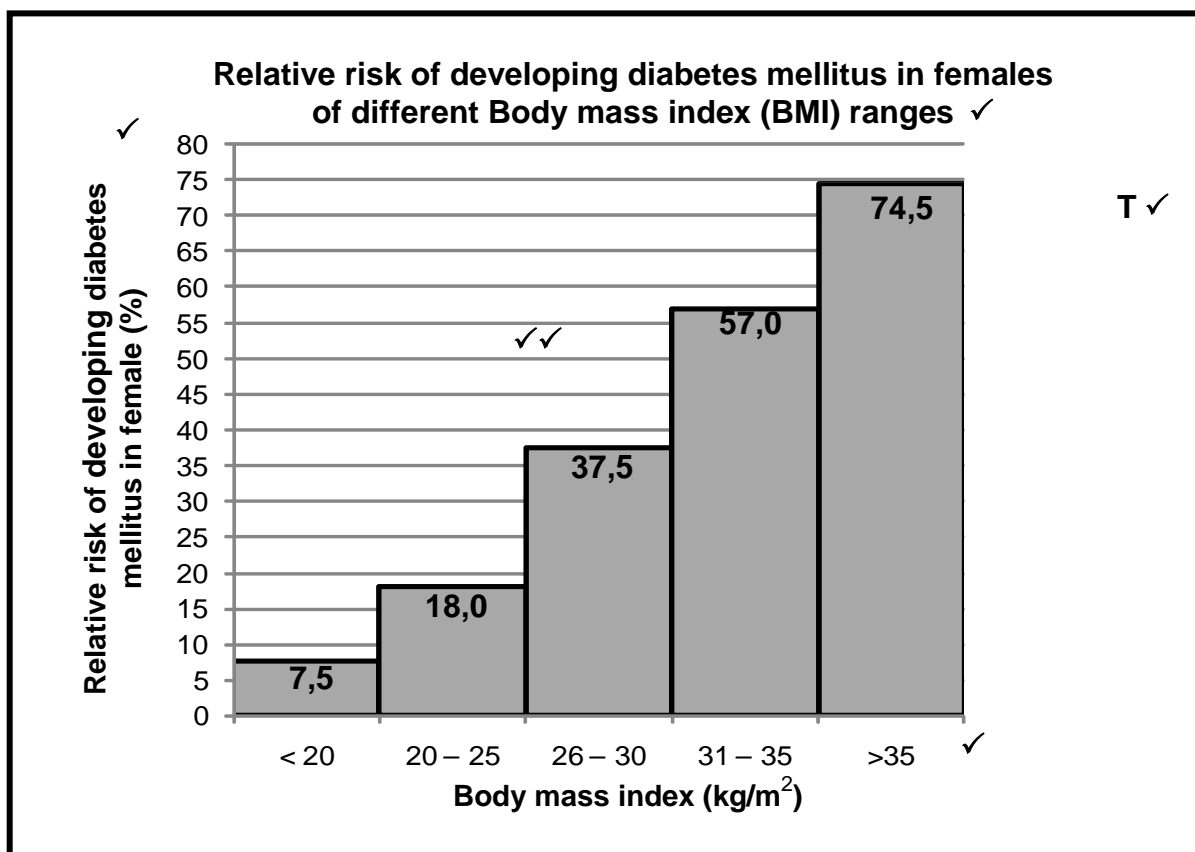


## SECTION C

### QUESTION 4

- |     |       |   |     |                    |
|-----|-------|---|-----|--------------------|
| 4.1 | 4.1.1 | Gibberellins stimulates cell elongation✓/cell enlargement/ growth in stems/elongation of internodes<br><b>(Mark first ONE only)</b>   | Any | (1)                |
|     | 4.1.2 | $(120 - 80)✓ \text{ mm} = 40 ✓ \text{ mm}✓$   |     | (3)                |
|     | 4.1.3 | Increase the number of plants used in each treatment✓<br>Repeat the investigation✓<br>Increase the period of the investigation✓<br><b>(Mark first TWO only)</b>                                     | Any | (2)                |
|     | 4.1.4 | Auxins diffused from the paste into the plants✓<br>inhibiting growth of the lateral branches✓<br>Once all the auxins were used up✓ from the paste<br>the growth of the lateral branches increased ✓ |     | (4)<br><b>(10)</b> |

4.2 4.2.1



**Check list for the mark allocation of the graph**

Correct type of graph (T)	1
Title of graph	1
Correct label , appropriate scale for X-axis and width of the bars for X-axis (including unit)	1
Correct label and appropriate scale for Y-axis (including unit)	1
Plotting of bars	1–1 to 4 bars plotted correctly 2–all 5 bars 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
- Marks will be lost for plotting of bars

(6)

4.2.2 Insulin✓

(1)

4.2.3 Pancreas✓

(1)

4.2.4 Glucagon✓  
Adrenalin ✓  
Thyroxin✓

**(Mark first TWO only)**

(in any order)

Any

(2)

**(10)**

- 4.3
- The menstrual cycle is a series of events that occur in the female body to prepare it for possible pregnancy✓
  - Which involves ovarian cycle✓
  - and the uterine cycle✓
  - It takes an average of 28 days✓
  - The pituitary gland✓/hypophysis
  - secretes FSH✓
  - which stimulates the development of a primary follicle✓ in the ovary
  - The developing follicle✓/Graafian follicle
  - secretes oestrogen✓
  - which stimulates the thickening of the lining of the uterus✓/endometrium
  - Around day 13 pituitary gland✓/hypophysis
  - secretes LH✓
  - which cause ovulation to occur✓
  - The remains of the Graafian follicle develops into the corpus luteum✓
  - which secretes the progesterone✓
  - which continues to stimulate the thickening of the uterus✓
  - High levels of progesterone✓
  - inhibits the production of FSH✓
  - so that the ovaries are no longer stimulated to produce another follicle✓
  - If fertilisation does not occur, the corpus luteum degenerates✓
  - and stops producing progesterone✓
  - The pituitary gland/hypophysis is no longer inhibited in its production of FSH✓ and a new follicle develops
  - The thick endometrium is no longer maintained✓/ it degenerates
  - and is shed together with blood/menstruation takes place

Any (17)

Content: (17)

Synthesis: (3)

(20)

### ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance	Logical sequence	Comprehensive
<b>Elaboration</b>	All information provided is relevant to the topic	Ideas are arranged in a logical/cause-effect sequence	All aspects required by the essay have been addressed
<b>Mark</b>	1	1	1
<b>Paper 2</b>	Only information relevant to the <i>menstrual cycle</i> or the <i>role of hormones of the menstrual cycle</i> is given. (There is no irrelevant information)	The events of the menstrual cycle are presented in the correct sequence and the hormones linked to the appropriate events	The role of all 4 hormones in the menstrual cycle are mentioned

R✓

L✓

C✓

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