



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

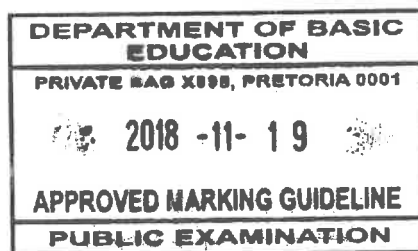
LIFE SCIENCES P1

NOVEMBER 2018

FINAL MARKING GUIDELINES – 20 November 2018

MARKS: 150

APPROVED
G S PILLAY
EXTERNAL MODERATOR
UMALUSI
G S Pillay
20/11/2018



Approved.
Dr P. Preethlall
Dr P. Preethlall
UMALUSI Moderator
20/11/2018

These marking guidelines consist of 11 pages.

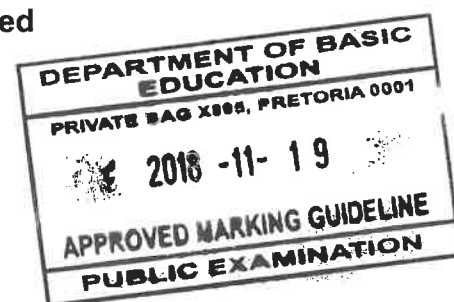
R van der Watt
Watt
INTERNAL MODERATOR
20/11/2018

APPROVED
P. B. MAJOZI
UMALUSI
P. B. Majози
20/11/2018

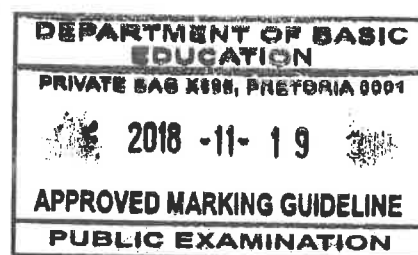
SECRET
INT MOD
Schultz

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum mark 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.



G S PILLAY
EXTERNAL MODERATOR
UMALUSI

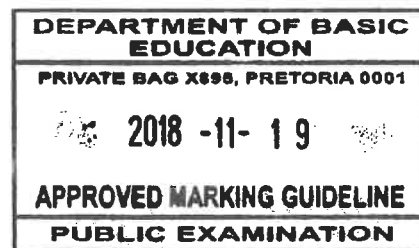
P. B. MAJOZI
UMALUSI

Dr P. Preethlall
UMALUSI Moderator

SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	B✓✓		
	1.1.3	D✓✓		
	1.1.4	C✓✓		
	1.1.5	C✓✓		
	1.1.6	A✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓		
	1.1.9	A✓✓		
	1.1.10	C✓✓	(10 x 2)	(20)
1.2	1.2.1	Amniotic✓ egg		
	1.2.2	Precocial✓ development		
	1.2.3	Cerebellum✓		
	1.2.4	Choroid✓		
	1.2.5	Corpus callosum✓		
	1.2.6	Hypothalamus✓		
	1.2.7	Carbon dioxide✓/CO ₂		
	1.2.8	Tropisms✓		
	1.2.9	Weed-killer✓/herbicide		
	1.2.10	Poaching✓		(10)
1.3	1.3.1	None✓✓		
	1.3.2	A only✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	(6)
1.4	1.4.1	Fertilisation✓		(1)
	1.4.2	Mitosis✓		(1)
	1.4.3	- Chorion✓ - Amnion✓ (Mark first TWO only)		(2)
	1.4.4	(a) Zygote✓ (b) Morula✓ (c) Blastocyst✓/blastula		(1) (1) (1)
	1.4.5	Fallopian tube✓/oviduct		(1)
	1.4.6	47✓		(1) (9)



P. B. MAJOZI
UMALUSI

Dr P. Preethlall
UMALUSI Moderator

G S PILLAY
EXTERNAL MODERATOR
UMALUSI

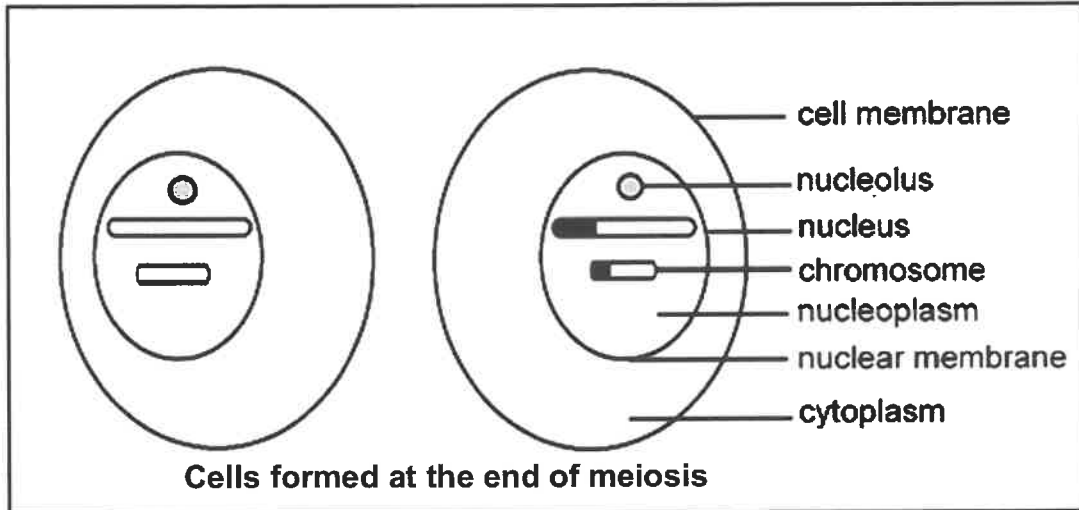
SECTION B

QUESTION 2

- 2.1 2.1.1 (a) Prophase I ✓
 (b) Anaphase I ✓
 2.1.2



(1)
(1)



Criteria for marking

Only two cells have been drawn (D)	1 mark
Each cell contains only two un-replicated chromosomes (C)	1 mark
Each chromosome is the correct size and correctly shaded (S)	1 mark
Any TWO correct labels	2 marks

(5)
(7)

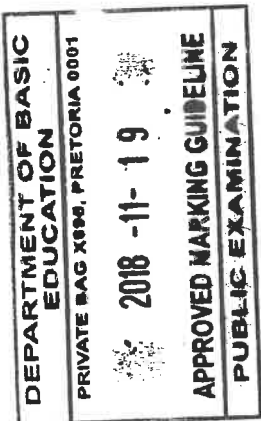
- 2.2 2.2.1 - Needed for spermatogenesis ✓
 - Stimulates the development of secondary male characteristics ✓ / deeper voice / facial hair / body hair / increased muscle mass / increase in size of the sex organs / sex drive
(Mark first ONE only) Any (1)
- 2.2.2 - Administering testosterone ✓ / hormonal treatment
 - Surgery ✓ (2)
(Mark first TWO only)
- 2.2.3 $33\frac{1}{3}\%$ ✓ % / 33,3 (1)
- 2.2.4 It increases the risk of testicular cancer ✓
(Mark first ONE only) (1)
- 2.2.5 - The temperature of the testes will be too high ✓ / poor blood circulation / increased pressure on the testes
 - therefore sperm will not mature ✓ / spermatogenesis will be negatively affected (2)

**P. B. MAJOZI
UMALUSI**

**Dr P. Preethlall
UMALUSI Moderator**

(2)
(7)

- 2.3 2.3.1 To calculate BMI✓ (1)
- 2.3.2 $41/100✓ \times 1510✓ = 619✓$ (Accept 619,1) (3)
- 2.3.3 Only women with planned pregnancies will know how long it took them to fall pregnant✓✓ (2)
- 2.3.4 All the women:
 - were the same age✓/between the ages of 20 and 30 years
 - were pregnant for the same amount of time✓/at least 20 weeks pregnant
 - had planned to fall pregnant✓
 - had conceived naturally✓
(Mark first ONE only) Any (1)
- 2.3.5 Do not smoke if your BMI is <20 or ≥ 30 ✓✓ (2)
- 2.3.6 - Similar/same results were obtained✓
 - in the second/repeated investigation✓ (2)
(11)
- 2.4 2.4.1 (a) Transmits sound waves to the tympanic membrane✓/Secretes ear wax
(Mark first ONE only) (1)
- (b) Equalises pressure on either side of the tympanic membrane✓
(Mark first ONE only) (1)
- (c) Releases pressure from the inner ear✓
(Mark first ONE only) (1)
- 2.4.2 (a) C✓ (1)
 (b) D✓ (1)
- 2.4.3 - The receptors cannot convert the stimuli into impulses✓
 - No impulses/fewer impulses are transmitted to the cerebrum✓
 - and the person does not hear anything✓/hearing is impaired (3)
- 2.4.4 - The sound vibrations are transmitted from the large tympanic membrane✓
 - to the smaller oval window✓
 - through the ossicles✓
 - which are arranged from largest to smallest✓
 - This concentrates the vibrations✓, amplifying them Any (3)
- 2.4.5 - A change in speed/direction of movement✓
 - stimulates the cristae✓
 - The stimulus is converted to an impulse✓
 - The impulse is transmitted to the cerebellum✓
 - via the auditory nerve✓
 - The cerebellum sends impulses to the muscles✓ to restore balance Any (4)
(15)
[40]



P. B. MAJOZI
UMALUSI

[Handwritten signature]

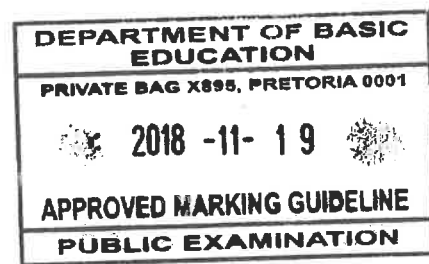
G S PILLAY
EXTERNAL MODERATOR
UMALUSI

Dr P. Preethlall
UMALUSI Moderator

[Handwritten signatures]

QUESTION 3

- | | | | |
|-----|-------|---|--|
| 3.1 | 3.1.1 | Auxins✓ | (1) |
| | 3.1.2 | (a) Light✓
(b) Gravity✓ | (1)
(1) |
| | 3.1.3 | Plant structure B has bent towards the light✓/towards A /positively phototropic | (1) |
| | 3.1.4 | <ul style="list-style-type: none"> - Auxins accumulated on the lower side✓ of the root - The high concentration of auxins on the lower side of the root inhibits growth✓ - The lower concentration of auxins on the upper side stimulates growth✓ - causing uneven growth✓/the root to bend downwards/positive geotropism | Any (3)
(7) |
| 3.2 | 3.2.1 | A✓ | (1) |
| | 3.2.2 | The impulse does not travel to the brain✓/goes directly from receptor to effector via the spinal cord | (1) |
| | 3.2.3 | <ul style="list-style-type: none"> - Allows the person to respond rapidly✓ - and without thinking✓/involuntarily - to a stimulus✓ - to prevent damage to the body✓* | 1* compulsory + any other 2 (3) |
| | 3.2.4 | Nerve✓/spinal cord | (1) |
| | 3.2.5 | <ul style="list-style-type: none"> - It acts as an insulator✓ - and therefore, speeds up the nerve impulse✓/prevents a short circuit | (2) |
| | 3.2.6 | <ul style="list-style-type: none"> - The person would be able to feel the stimulus✓ - but would be unable to react✓ - because the impulse would not be transmitted to the effector✓ | Any (2) |
| | 3.2.7 | <ul style="list-style-type: none"> - The receptor receives the stimulus✓ - and converts it into an impulse✓ - which is transported by a sensory neuron✓ via the spinal cord - to the brain✓*/cerebrum - The brain/cerebrum interprets the impulse✓* - The brain/cerebrum sends an impulse to a motor neuron✓ - which conducts the impulse to the effector✓ - to bring about a response✓ | 2* compulsory + any other 4 (6)
(16) |



3.3 3.3.1 The level increases✓ (1)

T✓

3.3.2

Fewer larger meals	More smaller meals
1. Maximum blood insulin concentration is higher✓/between 160-180 mg/dl	1. Maximum blood insulin concentration is lower✓/between 120-140 mg/dl
2. Minimum blood insulin concentration is lower✓/between 20-30 mg/dl	2. Minimum blood insulin concentration is higher✓/40 mg/dl
3. Blood insulin concentration rises and falls three times a day✓/less often	3. Blood insulin concentration rises and falls six times a day✓/more often
4. Large changes in insulin concentration✓/between 140-160 mg/dl	4. Small changes in insulin concentration✓/between 80-100 mg/dl
5. Insulin concentration drops below minimum glucose concentration✓	5. Insulin concentration varies above and below minimum glucose concentration✓

(Mark first TWO only)

1 for table + Any 2 x 2

(5)

3.3.3

- A diabetic may not produce sufficient insulin✓
- When eating many smaller meals, less glucose✓ enters the blood
- less insulin✓ is needed
- to return blood glucose to normal✓

OR

- A diabetic may not produce sufficient insulin✓
- When eating fewer larger meals, more glucose✓ enters the blood
- more insulin✓ is needed
- to return blood glucose to normal✓

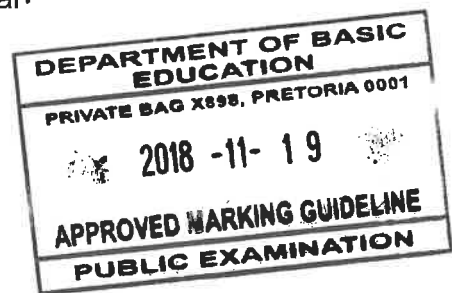
(4)

(10)

3.4 3.4.1 B✓

3.4.2

- The person is sweating✓
 - Vasodilation has occurred✓
- (Mark first TWO only)



(1)

(2)

3.4.3

Adrenalin✓

(1)

3.4.4

- Blood vessels are constricted✓
- Less blood is sent to the skin✓/sweat glands
- Less sweat is formed✓/less evaporation occurs
- and less heat is lost✓

Any

(3)

(7)

[40]

TOTAL SECTION B:

80

QUESTION 4

The causes of rapid global warming (H)

- The concentration of greenhouse gases in the atmosphere has increased✓
- The burning of fossil fuels✓/use of vehicles/fires
- and industrial processes✓
- have released large amounts of CO₂✓/N₂O/CFC's into the atmosphere

- Deforestation✓
- results in less CO₂ being removed from the atmosphere✓

- Due to the decomposition of organic waste in landfills✓/rice paddies
- and the increased number of livestock✓
- the concentration of methane/CH₄ in the atmosphere has increased✓

- This has caused the enhanced greenhouse effect✓
- More heat is trapped in the atmosphere✓

Any (8)

Impact of global warming on weather patterns (W)

- Higher temperatures✓ occur
- Heat waves occur✓
- The distribution of rainfall changes✓
- leading to increased rainfall in some areas✓
- while other areas will have decreased rainfall✓/experience droughts
- Storms are more severe✓/frequent

Any (3)

How changes in weather patterns affects food security (F)

- Food security decreases✓*

Changes in rainfall patterns cause:

- Desertification✓
- increased flooding✓
- and wildfires✓
- which increases soil erosion✓ resulting in:
 - o fewer crops to be planted✓
 - o lower crop yields✓
 - o less food for livestock✓

- Higher environmental temperatures negatively affects livestock✓/crops
- These factors further decrease food availability✓
- Food becomes more expensive✓



1*compulsory + Any other 5 (6)

Content: (17)
Synthesis: (3)
(20)

B. MAJOZI
UMALUSI

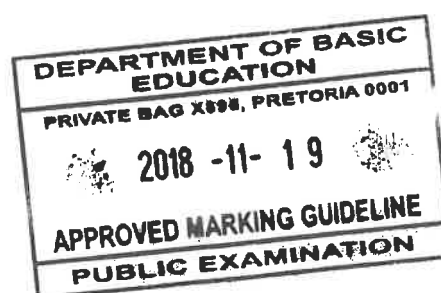
G S PILLAY
EXTERNAL MODERATOR
UMALUSI

Dr P. Preethlall
UMALUSI Moderator

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: - The causes of rapid global warming - The impact of global warming on weather patterns - How changing weather patterns affect food security	All the information regarding the: - The causes of rapid global warming - The impact of global warming on weather patterns - How changing weather patterns affect food security is arranged in a logical manner.	At least the following points should be included: - The causes of rapid global warming (H) (5/8) - The impact of global warming on weather patterns (W) (2/3) - How changing weather patterns affect food security (F) (4/6)
There is no irrelevant information 1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150



G S PILLAY
EXTERNAL MODERATOR
UMALUSI

P. B. MAJOZI
UMALUSI

Dr P. Preethlall
UMALUSI Moderator