



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P1

NOVEMBER 2018

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 9 pages.

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✓		(1)
	1.4.6	47✓		(1)
				(9)

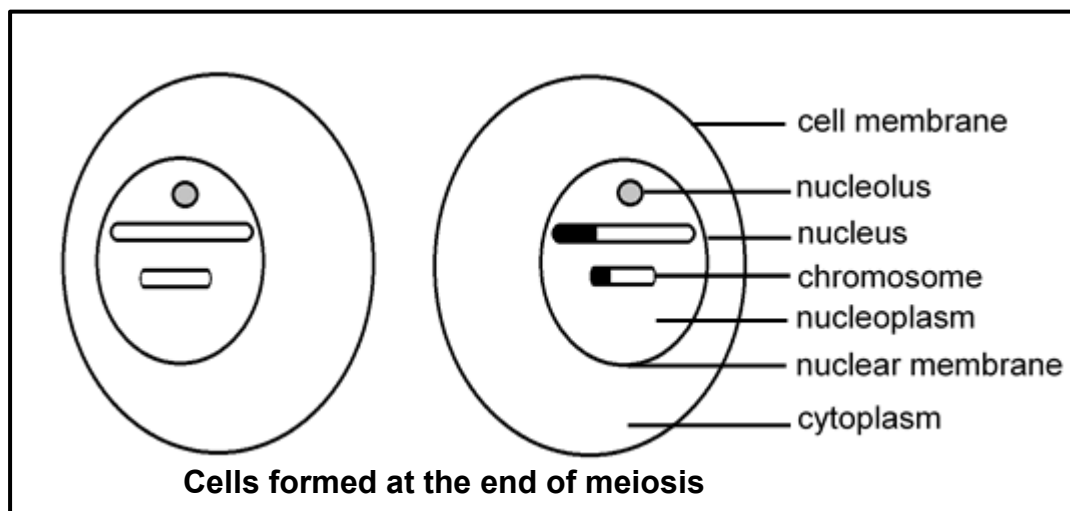
1.5	1.5.1	(a) Pituitary✓/hypophysis	(1)
		(b) Thyroxin✓	(1)
	1.5.2	Negative feedback✓ mechanism	(1)
	1.5.3	- Less hormone B✓/thyroxin will be secreted	
		- More hormone A✓/TSH will be secreted	
		(Mark first TWO only)	(2)
			(5)
TOTAL SECTION A:			50

SECTION B**QUESTION 2**

2.1 2.1.1 (a) Prophase I✓ (1)

(b) Anaphase I✓ (1)

2.1.2

**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 $33\frac{1}{3}\%$ ✓ (1)

2.2.4 It increases the risk of testicular cancer✓ (1)
(Mark first ONE only)

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)
(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)	(1)
	2.3.5	Any	(2)
	2.3.6	Do not smoke if your BMI is <20 or ≥ 30 ✓✓ - 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]

QUESTION 3

- | | | | |
|-----|-------|---|---|
| 3.1 | 3.1.1 | Auxins✓ | (1) |
| | 3.1.2 | (a) Light✓ | (1) |
| | | (b) Gravity✓ | (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✓

(1)

3.4.2

- The person is sweating✓
- Vasodilation has occurred✓

(Mark first TWO only)

(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)

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 There is no irrelevant information	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)
1 mark	1 mark	1 mark

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