



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2018

**LIFE SCIENCES P1
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 10 pages.

SECTION A**QUESTION 1**

- 1.1 1.1.1 C ✓✓
- 1.1.2 A ✓✓
- 1.1.3 D ✓✓
- 1.1.4 D ✓✓
- 1.1.5 B ✓✓
- 1.1.6 D ✓✓
- 1.1.7 C ✓✓
- 1.1.8 B ✓✓
- 1.1.9 C ✓✓
- 1.1.10 B ✓✓ (10 x 2) (20)
- 1.2 1.2.1 Obesity ✓
- 1.2.2 Starch ✓
- 1.2.3 Community ✓
- 1.2.4 Emigration ✓
- 1.2.5 Alcoholic fermentation ✓
- 1.2.6 Light energy / Solar energy / Radiant energy ✓
- 1.2.7 Competitive exclusion ✓
- 1.2.8 Interspecific competition ✓
- 1.2.9 Niche ✓ (9 x 1) (9)
- 1.3 1.3.1 None ✓✓
- 1.3.2 B only ✓✓
- 1.3.3 A only ✓✓ (3 x 2) (6)

- 1.4 1.4.1 (a) C ✓ (1)
- (b) A ✓ (1)
- (c) B ✓ (1)
- 1.4.2 B ✓ (1)
- 1.4.3 A ✓ and C ✓ (2)
- 1.5 1.5.1 Oesophagus ✓ (1)
- 1.5.2 Peristalsis ✓ (1)
- 1.5.3 **P** Liver / Pancreas ✓ (Any order) (1)
- Q** Pancreas / Liver ✓ (Any order) (1)
- 1.5.4 Stomach ✓ (1)
- 1.6 1.6.1 (a) Stroma ✓ (1)
- (b) Ribosome ✓ (1)
- 1.6.2 It stores the starch ✓ (1)
- 1.6.3 Granum / Grana / Thylakoid ✓ (1)

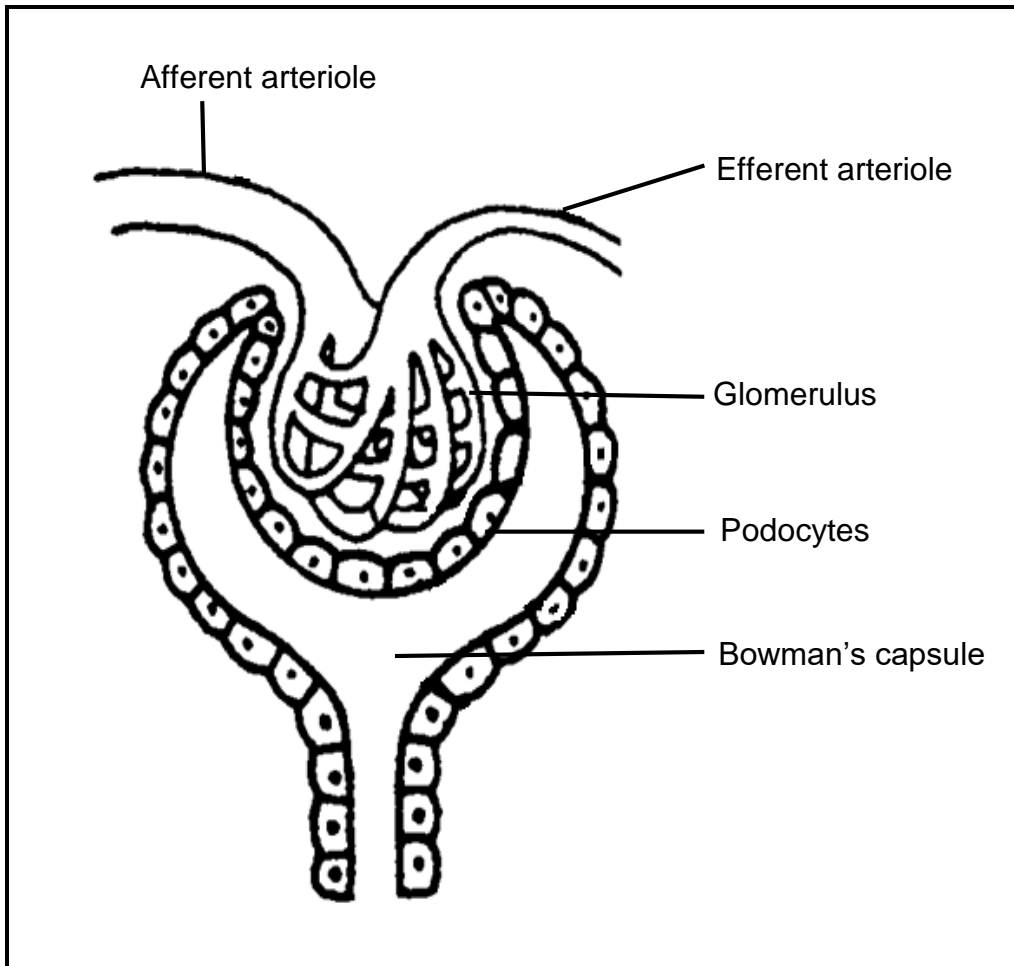
TOTAL SECTION A: 50

SECTION B

QUESTION 2

- 2.1 2.1.1 The number of births ✓ per 1000 females of child bearing age. ✓ (2)
- 2.1.2 The fertility rate decreased ✓ in BOTH developed and developing countries. ✓
But the fertility rate decreased MORE in the developing countries ✓ compared to the developed countries. (3)
- 2.1.3 - The people in both countries were becoming educated ✓
- There was more access to contraceptives ✓
- People concentrate more on their careers ✓
- Realisation: standard of living is higher in smaller families ✓
- The increase in sexually transmitted diseases led to people using more contraceptives like condoms ✓ (Any 2) (2)
- 2.1.4 Low fertility rate means fewer babies born (declining population) and this leads to:
- fewer workers ✓
- to drive the economy ✓/pay tax
- immigrants are brought in to work ✓/ outsource the work to other countries
- more money flows out of the country ✓
- aging population/many elderly to be supported ✓
- elderly don't contribute to the economy ✓
- negative effect on the economy ✓
(Mark the first THREE only) (Any 3) (3)
- 2.2 2.2.1 (a) Ureter ✓ (1)
(b) Kidney ✓ (1)
(c) (Urinary)Bladder ✓ (1)
- 2.2.2 The blood in **C** contains less waste products ✓ than the blood in **D** ✓
OR
The blood in **C** contains less oxygen ✓ than the blood in **D** ✓
OR
The blood in **C** contains more carbon dioxide ✓ than the blood in **D** ✓
(Mark the first ONE only) (Any 1 x 2) (2)

2.2.3



Rubric for marking diagram:

Criteria	Mark
Correct diagram and one blood vessel larger(wider) than the other	1
Any three correct labels	3

(4)

2.2.4 (a) Kidney stone ✓ / Renal stone

(1)

(b) Drinking more water ✓
Eat less food containing salt ✓
(Mark the first ONE only)

(Any 1)

(1)

2.3 2.3.1 Mark and recapture method ✓

(1)

2.3.2

$$P = \frac{M \times C}{R}$$

$$= \frac{50 \times 96}{8}$$

$$= 600 \text{ locusts}$$

(3)

- 2.3.3 - Only a short period of time between the first and second catch ✓
 - The organisms should not be harmed during the catching/markings ✓
 - Marked organisms should be able to move freely between the other organisms ✓
 - It should be a closed population ✓ / No immigration or emigration should take place
 - Repeat the investigation to calculate the average population ✓
(Mark the first TWO only) (Any 2) (2)
- 2.4 2.4.1 A villus ✓ (1)
- 2.4.2 (a) Columnar epithelium ✓ (1)
 (b) Lacteal vessel ✓ (1)
- 2.4.3 Small intestine ✓ (1)
- 2.4.4 - It is long, ✓ which means it has a very large surface area for absorption ✓
 - It has many folds ✓ which enlarges the surface area for maximum absorption of nutrients ✓
 - millions of villi and micro-villi ✓ which enlarge the surface area even further ✓
 - circular and longitudinal muscles ✓ responsible for the movement of food by peristalsis. ✓
 - Coiled tube slows down the movement of food ✓ (increases transit time) to ensure maximum absorption of nutrients. ✓
 - The thin-walled ✓ villi (outer walls of villi are lined by a single layer of columnar epithelium) facilitate easy absorption. ✓
 - Absorptive surface is kept moist ✓ by digestive juices and mucus to facilitate diffusion of nutrients. ✓
 - Villi are well supplied with blood capillaries and lacteals ✓ to ensure that absorbed nutrients are quickly transported away. ✓
(Mark the first TWO only) (Any 2 x 2) (4)
- 2.4.5 **C** ✓ (1)
- 2.4.6 - The capillary flows in at **D** ✓
 - Then absorption of nutrients will take place ✓
 - From the small intestine into the capillaries in the villus ✓
 - When the blood leaves at **C**, it will be rich with nutrients ✓
 (Any 2) (2)
- 2.4.7 - The body will not be able to absorb nutrients ✓* (minerals or vitamins)
 - They will run the risk of malnutrition ✓
 - which will lead to retarded growth ✓ / Fatigue / Weight loss
 * **Compulsory mark + any 1** (2)
[40]

QUESTION 3

- 3.1 3.1.1 The population size of lady birds ✓ and green flies over time ✓
OR
 The graph showing the predator prey interaction in an ecosystem over a period of time (from Jan '98 to Oct '99). (2)
- 3.1.2 Accelerated/Logarithmic/Geometric/Exponential growth phase ✓ (1)
- 3.1.3 Green flies ✓ (1)
- 3.1.4 - The two species control each other's population size ✓
 - When the lady bird population increased the green flies decreased ✓ due to increased rate of predation. ✓
 - When the population of green flies decreased, the number of lady birds decreased ✓ due to a shortage of food, ✓
 - therefore, size of both populations did not exceed the carrying capacity. ✓ (Any 3) (3)
- 3.2 3.2.1 When kidneys become so damaged ✓ they no longer function properly ✓ (2)
- 3.2.2 Dialysis ✓ (1)
- 3.2.3 B ✓ (1)
- 3.2.4 - The waste products move out from the dialysis tubing/blood ✓
 - where there is a high waste product concentration ✓
 - into the dialysis fluid ✓
 - where there is a low waste product concentration ✓
 - through the process of diffusion ✓
 - concentration gradient is maintained because dialysis fluid is being pumped ✓ (Any 3) (3)
- 3.2.5 Allows selective movement of waste products ✓ into dialysis fluid ✓ (Any 2) (2)
- 3.2.6 - More water will remain in the bloodstream ✓
 - Blood volume will increase ✓
 - therefore, the blood pressure will increase ✓ (3)
- 3.3 3.3.1 Carbon dioxide is released during aerobic respiration. ✓✓ (2)
- 3.3.2 To ensure all micro-organisms are killed. ✓ / To eliminate any other organisms. / To ensure the carbon dioxide present is only produced by the germinating seeds. (1)
- 3.3.3 - Same kind of seeds ✓
 - Constant temperature of 35 °C ✓
 - Apparatus kept in the dark ✓
(Mark the first TWO only) (Any 2) (2)

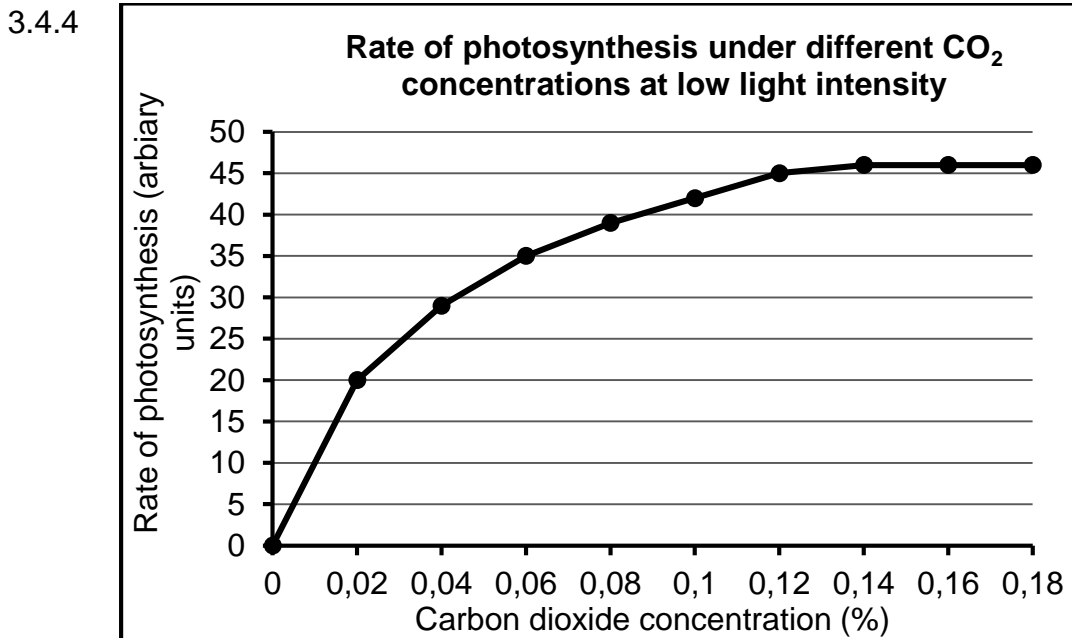
3.3.4 - The apparatus would be set up in the exact same way ✓
 - except by using no seeds ✓ / seeds that were boiled
 - To ensure that the changes observed in the investigation were caused by the cellular respiration/germinating seeds ✓ (3)

3.3.5 - Germinating seeds need a lot of energy for growth ✓
 - and the rate of cellular respiration will be high ✓
 - more carbon dioxide released ✓
 - achieving better results ✓ (Any 2) (2)

3.4 3.4.1 Rate of photosynthesis ✓ (1)

3.4.2 0,14% ✓ (1)

3.4.3 - Amount of water ✓
 - Temperature ✓
 - Light ✓
(Mark the first TWO only) (Any 2) (2)



Mark allocation for the graph:		
Line graph is drawn	1	
Title of the graph (includes both variables)	1	
Correct scale for x-axis and y-axis	1	
Correct labels and units for the x-axis and the y-axis	1	
Plotting of the points	0 points correct	0
	1–5 points correct	1
	All points correct	2
Only low light intensity graph is drawn	1	

(7)
[40]

TOTAL SECTION B: 80

SECTION C**QUESTION 4****Inhalation**

- The diaphragm contracts ✓
- It becomes less rounded ✓ / flat
- The external intercostal muscles contract ✓
- causing the ribcage to move up- and outwards ✓
- The volume of the chest cavity increases ✓
- The volume of the lungs also increases ✓
- The pressure decreases ✓
- Air flows into the lungs ✓

(Any 6) (6)

Gaseous exchange of oxygen in the lungs

- There is a high oxygen concentration in the alveoli ✓
- The blood has a low oxygen concentration ✓
- A concentration gradient is created ✓
- Oxygen will move from the alveoli to the bloodstream ✓
- By the process of diffusion ✓

(Any 4) (4)

Homeostatic control of carbon dioxide

- Because of exercise the carbon dioxide levels in the blood will increase ✓
- The medulla oblongata will be stimulated ✓
- to send messages to the heart ✓
- breathing muscles ✓
- the heart beats faster ✓
- blood with carbon dioxide is pumped to the lungs faster to be exhaled ✓
- the breathing muscles contract faster ✓
- and the rate and depth of breathing increases ✓
- more carbon dioxide is removed out of the body ✓
- The carbon dioxide levels decrease back to normal ✓

(Any 7) (7)

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance(R)	Logical sequence(L)	Comprehensive(C)
Generally	All information provided is relevant to the topic	Facts are arranged in a logical/sequential order	All aspects required by the essay have been sufficiently addressed.
In this essay	Only information with regard to inhalation, gaseous exchange of oxygen only in the lungs and homeostatic control of carbon dioxide	The sequence of events in inhalation, gaseous exchange and control of carbon dioxide levels is correct	Inhalation (4/6) Gaseous exchange (3/4) Homeostatic control of carbon dioxide (5/7)
MARK	1	1	1

Content: (17)
Synthesis: (3)

TOTAL SECTION C: 20
GRAND TOTAL: 150