



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

**NOVEMBER 2013**

**LIFE SCIENCES P2  
MEMORANDUM**

**MARKS:**

**150**

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This memorandum consists of 8 pages.

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**SECTION A****QUESTION 1**

- 1.1 1.1.1 A ✓✓
- 1.1.2 A ✓✓
- 1.1.3 B ✓✓
- 1.1.4 C ✓✓
- 1.1.5 A ✓✓
- 1.1.6 D ✓✓
- 1.1.7 C ✓✓
- 1.1.8 D ✓✓
- 1.1.9 D ✓✓
- 1.1.10 B ✓✓ (10 x 2) (20)
- 1.2 1.2.1 Mycelium ✓
- 1.2.2 Coccus ✓
- 1.2.3 Symbiosis ✓
- 1.2.4 Cephalisation ✓
- 1.2.5 Antibiotics ✓
- 1.2.6 Coelom ✓
- 1.2.7 Seed banks ✓
- 1.2.8 Segmentation ✓
- 1.2.9 Endosperm ✓
- 1.2.10 Sessile ✓ (10 x 1) (10)

1.3 1.3.1 A only ✓✓

1.3.2 A only ✓✓

1.3.3 None ✓✓

1.3.4 B only ✓✓

1.3.5 B only ✓✓

1.3.6 Both A and B ✓✓

1.3.7 Both A and B ✓✓

1.3.8 A only ✓✓

1.3.9 B only ✓✓

1.3.10 None ✓✓

(10 x 2) (20)

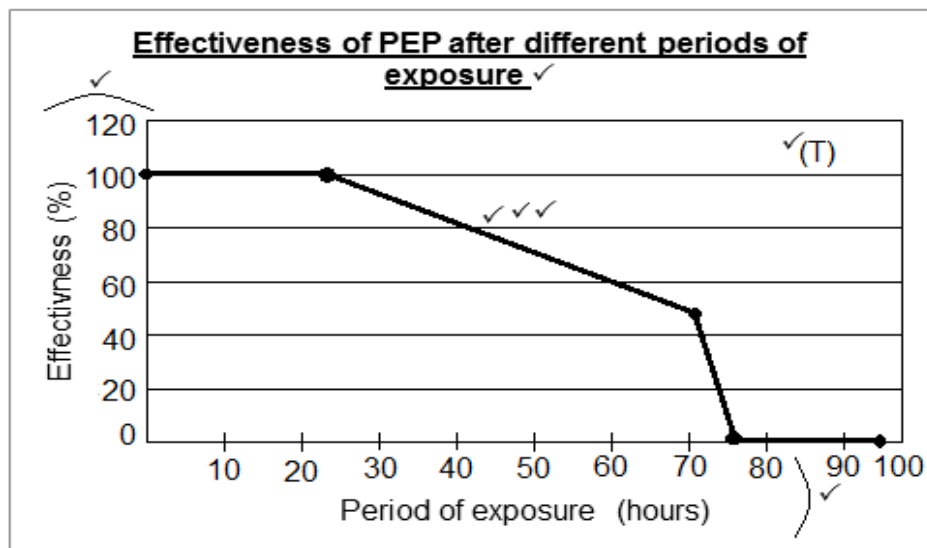
**TOTAL SECTION A: 50**

## SECTION B

## QUESTION 2

- 2.1 2.1.1 Injection ✓  
Orally ✓ (2)
- 2.1.2 dead or weakened germs ✓ (1)
- 2.1.3 T-lymphocytes ✓ (1)
- 2.1.4 It increased slowly to about day 50 ✓ where it is at its highest and then it decreased. ✓ (2)
- 2.1.5 It increased rapidly in the first ±30 days ✓ / (±day 140) / to its maximum, then levelled off and stayed constant ✓ until up to over 280 days. (2)

2.2 2.2.1



Guideline for the assessing of the graph

Correct type of graph	1
Title of graph	1
Correct label and scale of x-axis	1
Correct label and scale of y-axis	1
Plotting of points	1: 1 to 2 points plotted correctly 2: 3 to 4 points plotted correctly 3: all 5 points plotted correctly

**NOTE:**

If the wrong type of graph is drawn, 4 marks will be lost for:

- 'Correct type of graph'
- 'Plotting of points'

If labels of the axes are transposed then 2 marks will be lost for:

\* 'Correct label and scale for X- and Y axes'

(7)

2.2.2 70 ✓ % ✓ (2)

2.2.3 No. ✓  
PEP drugs are only effective if taken up to 72/76 ✓ hours after exposure. (2)

2.3 2.3.1 A – bilateral ✓  
B – asymmetrical ✓  
C – radial ✓ (3)

2.3.2 A: These animals usually move, ✓ as the central nervous system allows them to coordinate complex movements ✓ e.g. flying.  
C: Allows animals to view the environment equally from all sides. ✓ (3)

2.4 2.4.1 2010: 333 ✓  
2011: (8 + 7 + 4 + 250 + 58 + 121) ✓ = 448  
(333 + 448) ✓ = 781 ✓ (4)

2.4.2

Black Rhino		White Rhino	
1997	2010	1997	2010
1 043	1 916	1 043	1 916

1 mark for correct values for 1997 for both black and white rhinos  
1 mark for correct values for 2010 for both black and white rhinos  
1 mark for correct captions  
1 mark for drawing of table (4)

2.4.3 White rhino numbers have steadily increased ✓ until 2009 but by 2010 numbers started to drop. ✓ An increase in numbers is because of efforts to protect the rhino. ✓ Decrease in numbers is mainly due to poaching as result of the high price for rhino horn. ✓ (4)

- 2.4.4
- Providing better protection ✓ for rhinos in game reserves.
  - Increase numbers of anti-poaching teams ✓ such as the army.
  - Allow farmers to breed rhino ✓ and
  - To harvest the horn to sell ✓ which can be done annually
  - This will help to reduce black market prices ✓
  - Sale of horns to be legalised and regulated ✓
  - Educate people about the real medicinal value of rhino horns. ✓
- (Any 3 x 1) (3)

[40]

**QUESTION 3**

- 3.1 3.1.1  $\frac{6\ 000}{100} \checkmark \times 30 \checkmark$   
 $= 1\ 800 \checkmark$  tons (3)
- 3.1.2 - There could be littering  $\checkmark$  when wind blows plastic bags into surrounding areas.  $\checkmark$   
 - The ground water could be polluted  $\checkmark$  when chemicals drain through to the bottom of the landfill when it rains.  $\checkmark$   
 - Air pollution occurs  $\checkmark$  when the waste is burned.  $\checkmark$  (Any 2 x 2) (4)
- 3.1.3 - They could have compost heaps and not throw away organic waste.  $\checkmark$  (Any other acceptable answer.) (1)
- 3.2 3.2.1 - If plants are removed less carbon dioxide  $\checkmark$  will be absorbed from the atmosphere via photosynthesis.  $\checkmark$   
 - The concentration of CO<sub>2</sub>  $\checkmark$  in the air will not be reduced  $\checkmark$   
 - thus increasing the amount of greenhouse gases in the air  $\checkmark$  (Any 3 x 1) (3)
- 3.2.2 - Forest floors have a thin layer of topsoil,  $\checkmark$  held firmly by the root system  $\checkmark$  of trees and shrubs  
 - When deforestation occurs, this layer of topsoil rapidly washes away  $\checkmark$   
 - Leaving the subsoil bare, forming dongas and erosion scars.  $\checkmark$  (Any 3 x 1) (3)
- 3.2.3 - If plants are removed, less water is absorbed  $\checkmark$  by plant roots when it rains.  $\checkmark$   
 - This results in less water passing through the plants and less water vapour is later released into the atmosphere  $\checkmark$  by transpiration.  $\checkmark$  (Any 3 x 1) (3)
- 3.3 3.3.1 - The amount of ozone depletion increased  $\checkmark$  from 1982 to 1986  
 - Then there was a slight decrease to 1988  $\checkmark$  and  
 - an increase until 1994  $\checkmark$   
 - Since 1994, ozone depletion has decreased.  $\checkmark$  (4)
- 3.3.2 6 000 tons  $\checkmark$  (1)
- 3.3.3 CO<sub>2</sub>,  $\checkmark$  methane,  $\checkmark$  nitrogen oxide;  $\checkmark$  water vapour in fog  $\checkmark$ ;  
 surface ozone  $\checkmark$  (Any 3 x 1) (3)
- 3.3.4 CFC's can carry on destroying the ozone.  $\checkmark$  (1)

- 3.3.5 - Legislation was passed ✓ forcing countries to control pollution from industries.  
- CFC's were replaced by law ✓ by less harmful substances in fridges and cooling devices,  
- Lead free petrol was introduced ✓  
- People were educated ✓ and become more aware of the problem. (Any 3 x 1) (3)
- 3.4 3.4.1 A Phylogenetic tree is a diagram that shows the evolutionary relationship ✓ among a group of organisms. ✓ (2)
- 3.4.2 (a) False. ✓ The circle numbered 2 represents the common ancestor of the protea bush, palm tree and maize plant. ✓ **OR** The circle numbered 3 represent the common ancestor of the palm tree and maize plant. ✓ (2)
- (b) False. ✓ Proteas are more closely related to maize plants because they share a more recent common ancestor. ✓ (2)
- (c) False. ✓ Palm trees and pine trees share a common ancestor which is now extinct. ✓ (2)
- (d) True. ✓ They all share a common ancestor that had flowers. ✓ (2)
- 3.4.3 100 ✓million years ago (1)
- [40]**

**TOTAL SECTION B: 80**

## SECTION C

## QUESTION 4

- 4.1 - **Eutrophication** is the addition of high levels of nutrients especially nitrogen and phosphorus to water. ✓
- It is caused by allowing untreated sewage to flow into rivers or wetlands ✓
  - Also when fertilisers get washed into rivers, streams. ✓
  - or when fertiliser industries pour waste into rivers, streams ✓
  - The extra nutrients allow the algae and other aquatic plants to grow ✓
  - and reproduce very quickly and cover the surface of the water. ✓
  - The rapid growth of algae is called an algal bloom. ✓
  - Certain algae in algal blooms can release toxins into the water ✓
  - that are harmful to humans and other animals. ✓
  - The algae become overcrowded and eventually they die ✓
  - due to a lack of sunlight. ✓
  - Bacteria in the water decompose the dead plant material. ✓
  - The bacteria use up a lot of the oxygen ✓ in the water during decomposition
  - As a result, aquatic animals e.g. fish insects etc. die ✓
  - due to a lack of oxygen. ✓

(Any 8 x 1)

- **Acid Mine Drainage (AMD)** is the drainage of highly acidic water from mines onto the surface of the land or into groundwater. ✓
- Acid mine water is formed when groundwater flows over the rocks in old mine shafts and tunnels in gold and coal mines. ✓
- The water dissolves sulphide minerals out of the rocks ✓
- which form sulphuric acid. ✓
- The sulphuric acid lowers the pH ✓ of the water.
- The sulphuric acid in turn dissolves metals out of the rocks. ✓
- These metals include toxic heavy metals such as manganese, and radioactive practices. ✓
- Radium and uranium are radioactive elements which release radiation ✓
- into the environment, which is very harmful to living organisms. ✓
- Acid mine water gradually fills up old mines and rises to the surface ✓
- where it spreads out and pollutes rivers and wetlands and harms or kills plants and animals ✓ that are in contact with the water
- It also moves into underground water supplies ✓
- which may be used for irrigation or drinking and will therefore harm plants and animals in this way too. ✓

(Any 9 x 1) (17)

## ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Descriptions
3	Well structured – demonstrates insight and understanding of question.
2	Minor gaps in the answer.
1	Attempted but with significant gaps in the answer.
0	Not attempted/nothing written other than question number.

Synthesis (3)

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