



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

**NOVEMBER 2014**

**LIFE SCIENCES P2  
MEMORANDUM**

**MARKS: 150**

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This memorandum consists of 10 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 Prokaryote ✓
- 1.2.2 Through gut ✓
- 1.2.3 Angiosperms ✓
- 1.2.4 Antigens ✓/ vaccines
- 1.2.5 Fermentation ✓
- 1.2.6 Eutrophication ✓
- 1.2.7 Coelom ✓
- 1.2.8 Decomposers ✓
- 1.2.9 Monoculture ✓
- 1.2.10 Biological control ✓ (10 x 1) (10)

1.3 1.3.1 B only ✓✓

1.3.2 Both A and B ✓✓

1.3.3 B only ✓✓

1.3.4 Both A and B ✓✓

1.3.5 Both A and B ✓✓

1.3.6 A only ✓✓

1.3.7 None ✓✓

1.3.8 A only ✓✓

1.3.9 A only ✓✓

1.3.10 None ✓✓

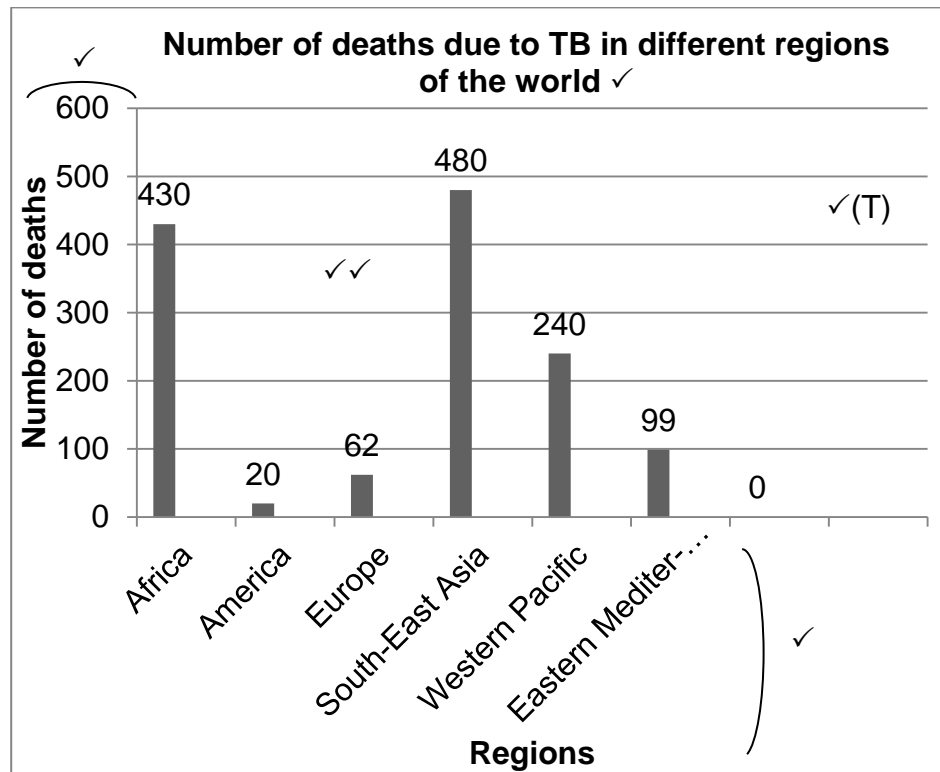
(10 x 2) (20)

**TOTAL SECTION A: 50**

## SECTION B

## QUESTION 2

2.1 2.1.1



Guideline for the assessing of the graph

|                                   |   |
|-----------------------------------|---|
| Correct type of graph             | 1   |
| Title of graph                    | 1   |
| Correct label and scale of x-axes | 1   |
| Correct label and scale of y-axes | 1   |
| Plotting of points                | 1: 1 to 3 points plotted correctly<br>2: all 6 points plotted correctly |

**NOTE:**

If the wrong type of graph is drawn, 3 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-axis and Y-axis'

(6)

$$2.1.2 \quad \text{Eastern Mediterranean} = \frac{1\,000}{14\,000} \times 100 \checkmark$$

$$= 7,1\% \checkmark$$

(2)

- 2.1.3 They are developed countries ✓ with low levels of poverty ✓ / good health and social infrastructure. / Most people are well-nourished ✓ and do not live in crowded / dirty / unhygienic conditions. ✓ (Any 1 x 2) (2)
- 2.2 2.2.1
- Wear rubber gloves ✓ when taking the samples so as not to get contaminated with germs. ✓
  - Samples should be taken using a container/bottle attached to a string ✓ to avoid stepping too close to the river bank ✓ / prevent drowning / prevent falling into the river / prevent contamination. (2 x 2) (4)
- 2.2.2 Temperature of the human body ✓ at which bacteria normally lives ✓ / *E. coli* normally lives in large intestine of humans / to allow bacteria to reproduce. (2)
- 2.2.3 Lack / absence of proper sewage system ✓ / poor hygiene results in faeces getting into the water. ✓ (2)
- 2.3 2.3.1
- 1 – Gametophyte ✓
  - 2 – Gametes ✓
  - 3 – Zygote ✓
  - 4 – Sporophyte ✓
- (4)
- 2.3.2
- (a) fertilisation ✓
  - (b) meiosis ✓
- (2)
- 2.3.3
- (a) Protonema ✓
  - (b) Prothallus ✓
- (2)
- 2.4 2.4.1 Platyhelminthes ✓ and Arthropods ✓ (2)
- 2.4.2
- Provides an efficient hydrostatic skeleton ✓ / provides support
  - Provides space for the extensive growth of organs. ✓ (Any 1 x 1) (1)
- 2.4.3 Bilateral symmetry ✓ (1)
- 2.5 2.5.1 4 ✓ (1)
- 2.5.2 7 ✓ (1)
- 2.5.3 Stigma is higher than the anther. ✓ (1)

- 2.5.4
- It has a well-developed vascular system. ✓✓
  - Sexual reproduction is independent of water. ✓✓
  - Fertilisation occurs by means of pollinators. ✓✓
  - Have true roots stem and leaves ✓✓
  - Sporophyte is the dominant generation. ✓✓
  - Produce seeds. ✓✓
- (Any 1 x 2) (2)

2.6 2.6.1 As years go by, ✓ rhinoceros hunting ✓ is increasing. ✓ (3)

2.6.2 Number of rhinos hunted. ✓ (1)

2.6.3 The year in which rhinos are hunted. ✓ (1)

**[40]**

### QUESTION 3

- 3.1 3.1.1
- (a) C ✓
  - (b) A ✓
  - (c) A ✓ and B ✓ and C ✓
  - (d) B ✓
- (Any : (5)

3.1.2 Advantage:

Since it is hard, it protects the animal against mechanical injury. ✓  
It provides points of attachment for muscles. ✓ (Any 1 x 1)

Disadvantages:

Since it is impermeable, no gas exchange can occur. ✓  
Cannot stretch to accommodate growth of the body. ✓  
New soft exoskeleton does not offer much protection. ✓ (Any 1 x 1) (2)

- 3.1.3
- No mixing of food ✓ because it moves in one direction. ✓
  - It allows digestion to take place ✓ continuously. ✓
  - The gut is specialised ✓ where different regions become adapted for specific functions. ✓
- (Any 1 x 2) (2)

3.1.4 Mesoderm ✓ (1)

3.2 3.2.1 1997/2001, ✓ 12 months of records are shown on the graph. ✓ (2)

3.2.2 January/February/November/December ✓/ summer months (1)

3.2.3 CFC (Chlorofluorocarbon) ✓  
HFC (Hydro fluorocarbon) ✓ (2)

- 3.2.4 • Ozone reacts with UV-B rays to make them harmless, ✓ thus a reduction in stratospheric ozone will increase the quantity of UV-B rays. ✓  
• thus reducing the effectiveness of producers in food chains. ✓  
• A reduction in producers leads to a reduction in consumers. ✓  
• Its depletion in the stratosphere causes more harmful UV-B rays to reach the earth. ✓ which will destroy enzymes essential for photosynthetic pathways. ✓ (Any 2 x 2) (4)
- 3.2.5 Yes ✓ It damages all forms of life and also grasslands and succulent-Karoo which are dry areas and particularly prone to desertification. ✓ (2)
- 3.3 3.3.1 1982: 150 kg/year ✓ 2000: 138 – 145 kg/year ✓ (2)
- 3.3.2 The yield decreased ✓ and then came back to the former production. ✓ (2)
- 3.3.3 The production has remained low ✓ between 125 kg/year and 175 kg/year ✓ for 20 years. ✓ It has not changed very much. ✓ (Any 2 x 1) (2)
- 3.3.4 The data shows that even though the population in Africa has grown, ✓ the food production has not increased in line with the growth. ✓ This makes food security unsure for the future. ✓ (3)
- 3.4 3.4.1 Primary carbon footprint is the carbon emitted by the direct involvement ✓/ activity of a person while secondary carbon footprint is the emissions due to indirect involvement ✓/ consumption /services. (2)
- 3.4.2 Home – gas, oil, and coal. ✓  
Recreation and leisure ✓ (2)
- 3.4.3 Public transport ✓ and financial services. ✓ (2)

- 3.4.4
- R – Reduce heating cost ✓/ use blankets and warm clothes / hot water bottles.
  - U – Use public transport. ✓/ use bicycles.
  - N – Never leave electrical appliances switched on that are not being used. ✓
  - B – Buy products that have less packaging to reduce waste. ✓
  - T – Turn off the geyser when not in use. ✓
  - Use light bulbs that are carbon friendly. ✓
  - Buy local products ✓/ fresh products
  - Use unleaded petrol ✓
  - Educate people about the impact of the carbon footprint.
  - Reduce the use of paraffin and coal (Any 4 x 1)

(Accept any reasonable answer)

(4)

**[40]**

**TOTAL SECTION B: 80**



**SECTION C****QUESTION 4****4.1 Waste management strategies:**

1. **Landfill management and recovery of energy from burning it.** ✓
  - Utilise the heat generated from the burning of landfill sites ✓
  - to generate electricity thus saving on the electricity bill ✓ for heating and cooking.
  - Investigate methods to collect and utilise methane gas as a fuel. ✓
  - Place plastic liners under landfill sites during construction. ✓
  - to prevent leaching from waste into groundwater ✓ / rivers/oceans.
  - Rehabilitate old landfill sites to prevent pollution. ✓ / phytoremediation.
2. **Recovery and recycling** ✓
  - Encourage citizens of the city to put different types of waste into different waste containers/bins of different colours. ✓
  - Partnership with recycling companies for improved collection of different waste. ✓
  - Fines for people that do not separate the waste into different bins. ✓
  - This could generate income and reduce transport costs. ✓
  - Educate people on how to use organic waste ✓
  - for example to make compost which could fertilise soil, so they can plant vegetables. ✓
  - New products can be made from recycled materials. ✓
  - which benefits the economy by creating employment ✓ / alleviate poverty.
  - Clean up dumping sites and build useful facilities like sports fields. ✓
3. **Educate citizens and companies to reuse waste.** ✓
  - Glass containers for milk, cold drinks and alcohol etc. ✓
  - This will reduce the need to produce more of these items ✓
  - thus saving energy and money. ✓
4. **Reducing waste** ✓
  - Charge/penalise people extra if they generate more waste. ✓
  - Encourage citizens to manage waste more efficiently/renewable. ✓
  - Reward those who manage efficiently. ✓
  - Recycle, re-use and reduce waste. ✓

(Maximum 4 marks per strategy) (17)

| Relevance (R)                                     | Logical Sequence (L)   | Comprehension (C)   |
|---|--|---|
| All information provided is relevant to the essay | Ideas are arranged in a logical manner by answering the question under different headings. | In the body of the essay, minimum 12 relevant points out of the 17 maximum points are stated. |

Synthesis (3)

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