education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

LIFE SCIENCES P2

EXEMPLAR 2007

MEMORANDUM

This memorandum consists of 10 pages.

SECTION A

Question 1

1.1
1.1.1 C✓✓
1.1.2 A✓✓
1.1.3 C✓✓
1.1.4 D✓✓
1.1.5 B✓✓

                                                                    5 x 2 = **(10)**

1.2
1.2.1 Sustainable development✓
1.2.2 Carbon dioxide (CO_2) /nitrous oxide (N_2O)/ Sulphur dioxide (SO_2) ✓
1.2.3 Smog✓
1.2.4 Insecticides✓
1.2.5 Reforestation✓
1.2.6 Migration✓
1.2.7 Census✓
1.2.8 Endangered✓Red data species
1.2.9 Red Data List✓

                                                                              (9)

1.3
1.3.1 G✓
1.3.2 F✓
1.3.3 H✓
1.3.4 B✓
1.3.5 C✓
1.3.6 K✓
1.3.7 L✓   **(7)**

1.4
1.4.1 In Pyramid 1 -   the producers are more abundant ✓ followed by the
                        consumers which decrease from one level to next
        In Pyramid 2 – the producers are the smallest number✓ of organisms
                        and the consumers are more/has higher productivity   (2)

1.4.2 Tree✓ ⟶ birds✓ ⟶ parasite✓   (+1 for flow of chain)   (4)
        or any other suitable example

                                                                              (6)

1.5
1.5.1 (a)   50✓
       (b)   38✓   (2)

1.5.2 It will be reduced✓   (1)

1.5.3 Census/registration of births and deaths✓   (1)

1.5.4 - better health care✓
       - better social/welfare/immunization programmes/ medical care✓
       - higher food production✓
       - better education✓
               (Mark first TWO only)   any 2 (2)

1.5.5 One individual replaces 2 parents✓   (1)
                                                                                                  (7)

1.6
1.6.1 C✓   (1)
1.6.2 A✓   (1)
1.6.3 D✓   (1)
1.6.4 E✓   (1)
1.6.5 B✓   (1)
                                                                                                  (5)

1.7
1.7.1 -   between 1982 and 1986 the amount of ozone depletion increased✓
       -    then a slight decrease✓ to 1988 and
       -    an increase until 1994✓
       -    Since 1994 the ozone depletion decreased✓   any   (2)

1.7.2 6 000✓ tons   (1)

1.7.3. They keep on destroying the ozone✓   (1)

1.7.4 -   Legislation was passed for 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 became more aware✓
       (Mark first TWO only)   (2)
                                                                                                  (6)

                                                                    TOTAL QUESTION 1:   [50]
                                                                    TOTAL SECTION A: [50]

SECTION B

Question 2

2.1
2.1.1 -   If plants are removed less carbon dioxide✓will be absorbed from the
              atmosphere via photosynthesis.
        -       The concentration of CO_2 ✓in the air will not be reduced✓
        -        thus increasing the amount of greenhouse gases in the air✓

                                                                                  (4)

2.1.2 -   Forest floors have a thin layer of topsoil✓, held firmly by the root
              system✓ of threes and shrubs
        -       When deforestation occurs, this layer of topsoil rapidly washes
              away✓
        -       Leaving the subsoil bare, forming dongas and erosion scars✓   (4)

2.1.3 -   If plants are removed, less water is absorbed by plant roots ✓
              when it rains✓
        -       This results in less water passing through the plants and less
              water vapour is later released into the atmosphere✓ by
              transpiration✓   (4)
                                                                                 (12)
2.2
2.2.1 Sample site A✓   (1)

2.2.2 Sample site D✓   (1)

2.2.3 Oil✓   (1)

2.2.4 Sample B✓   (1)

2.2.5 Sample B has greater✓ shaded portion✓   (2)

2.2.6   Regular service of oil tankers✓
        Legislation on the amount of oil, oil tankers might transport✓
        Monitoring of travel routes✓
        Use bacteria to dissolve the oil spill✓   any 2 x 1   (2)
        (Mark first TWO only)   **(8)**

2.3

2.3.1   To record the length✓ of the root of the germinating seed✓   (2)

2.3.2   Omit SO$_2$ /sulphur dioxide✓   (1)

2.3.3   If germinating bean seeds were exposed to sulphur dioxide✓ the growth of
the roots of beans will slow down✓   (2)
        OR
If germinating bean seeds were exposed to sulphur dioxide✓ the growth of
the roots of beans will increase✓

2.3.4   There would have been no increase✓ in length of the root✓
    OR
growth✓ slow down further/stop✓
    OR
plant will die✓✓   (2)

2.3.5   It mixes with the water vapour✓ in the atmosphere to form acid rain✓
Acid rain eats away stonework's on buildings✓/corrodes metal railings and
bridges, kills plants   (3)
                                                                   (10)
                                               Total Question 2:   [30]

Question 3

3.1
3.1.1 Predator-prey/predation✓   (1)

3.1.2 -   an increase in the size of the prey population✓
        -      provides more food for the predator population✓
        -      which therefore increases in size ✓
        -      as the predator population increases, more prey are eaten✓
        -      and the population decreases✓
        -      less food for the predators✓   any 4 x 1   (4)

3.1.3 Carrying capacity✓   (1)

3.1.4 - growth rate will slow down✓
        - density-dependent factors✓/intra-specific competition will take place   (2)

3.1.5 B✓   (1)
                                                                                                  (9)

3.2
3.2.1 -   animals die✓
        -      famine✓
        -      wells dry up✓
        -      levels of rivers and lakes drop✓
        -      water restrictions are imposed✓
        -      dust bowls can be created✓
        -      industries are affected if water is unavailable✓
               (Mark first THREE only)   any 3 x 1   (3)

3.2.2 -   grass and seeds more resistant to dry spells✓
        -      disguises the seeds✓
               (Mark first TWO only)   any 2 x 1   (2)

3.2.3 -   building dams to store water✓
        -      controlling populations✓
        -      keeping less livestock✓
        -      manage land and water resources carefully✓
        -      desalination✓
        -      cloud seeding and 'rain making'✓
        -      plant trees✓
        -      control soil erosion✓   any 3 x 1   (3)
               (Mark first THREE only)
                                                                                                  (8)

3.3

3.3.1 It will be smaller/negative✓   (1)

3.3.2 If the parents die
- the breadwinners die✓
- children will become orphans✓
- roam streets/no discipline✓
- no socio-economic structure✓   any   (3)
                                                                                              (4)

3.4

3.4.1 To increase the reliability of the results✓   (1)

3.4.2 Intra-specific✓   (1)

3.4.3 J/geometric growth curve✓   (1)

3.4.4

Week	Average number of *Salvinia* plants in the greenhouse
0	20
1	300
2	800
3	1 500
4	900
5	500

Marking Criteria

Criteria	Marks
Column headings	✓
Row headings	✓
1 to 2 readings correct	✓
3 to 4 readings correct	✓
5 to 6 readings correct	✓
Draw table	✓

                                                                                              (6)
                                                                                              (9)

                                                        Total Question 3: [30]
                                                        TOTAL SECTION B: [60]

SECTION C

Question 4

4.1
4.1.1 - the numbers of the beetles✓/ spiders/carnivores would be smaller✓ (2)

4.1.2
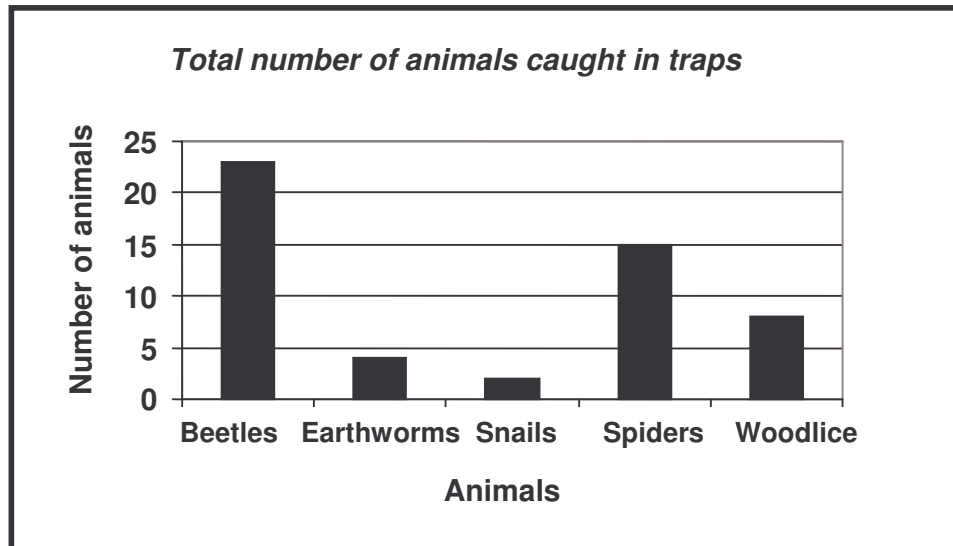
Rubric for the mark allocation of the graph

Correct type of graph	1
Title of graph	1
Correct label for X-axis	1
Correct label for Y-axis	1
Appropriate scale for X-axis/ correct width of bars	1
Appropriate scale for Y-axis	1
Plotting of the bars	Give 1 mark for each bar drawn correctly (max 5)

Wrong type of graph drawn: marks lost for "correct type of graph" as well as for drawing of the bars. (11)

4.1.3 $\dfrac{20 \times 30\ ✓}{10\ ✓}$
   $= 60✓$ (3)

4.1.4   So that the mark is not permanent✓ (1)

4.1.5   Some beetles may have left the area✓
   Some beetles may have died✓ (2)
   (Mark first TWO only)

(21)

4.2

4.2.1 Adult elephants consume a lot of plant material daily✓ which would
threaten the vegetation✓ and biodiversity✓ and trample undergrowth✓
any 2 (2)

4.2.2 Culling✓
Sterilize the elephants✓
Move elephants to other parks✓
Enlarge the area/ take down fences✓ any 2 (2)
(Mark first TWO only) **(4)**

4.1 The learners must give his/her view on the government's capacity and
resources in the prevention and treatment of the diseases.
The learner states THREE ways in which he/she as an individual can play
a role in the prevention and control of infectious diseases

Government capacity on:
Economics – money must be available for installation of proper sanitation,
medication to prevent epidemics.
Physical – hospitals, medicine, clinics
Human – medical staff in case of epidemics, planning by city planners

Examples on: Strategies of ways to prevent the diseases
• Vaccination programs for diseases
• Educate people on the causes and prevention of infectious diseases
• Supply clean healthy drinking water to communities to prevent
cholera/amoebic dysentery
• Use of insecticides and pesticide to control spreading of disease like
malaria
• Supply good sanitation
• Alleviation of poverty

Examples on: Strategies of ways to treat the diseases
• Quarantine affected areas
• Immediate availability of antibiotics and medicine.
• Treatment consists mainly of intravenous or oral replacement of
fluids and salts.

Examples that you, as an individual, can do:
• Avoid swimming or wading in freshwater in endemic regions
• Boil water for two minutes if you think it is not safe
• Do not urinate in dams, rivers and streams
• Use toilet facilities
• Appropriate hygiene education, for example washing your hands
before eating and after using the toilet
• Eat healthy to help your immune system.

The following rubric will be used to assess your essay:

Criteria	Marks		
	1	2	3
Viewpoint on government capacity and resources	Only one view stated on one relevant resource	Two views stated on two relevant resources	Three views stated on three relevant resources
Explanation on strategies of prevention	One appropriate explanation given	Two appropriate explanations given	Three appropriate explanations given
Explanation on strategies of treatment	One appropriate explanation given	Two appropriate explanations given	Three appropriate explanations given
Explanation on ways you ply a role	One relevant explanation given	Two relevant explanations given	Three relevant explanations given
Synthesis	Attempted but with significant gaps in the logic and flow of the answer	Minor gaps in the logic and flow of the answer	Well structured, demonstrates insight and understanding of question

(15)

TOTAL QUESTION 4: 40
TOTAL SECTION C: 40
GRAND TOTAL: 150