GRADE 11 EXEMPLAR PAPERS

LIFE SCIENCES: PAPER II

MARKING GUIDELINES

Time: 2½ hours 150 marks

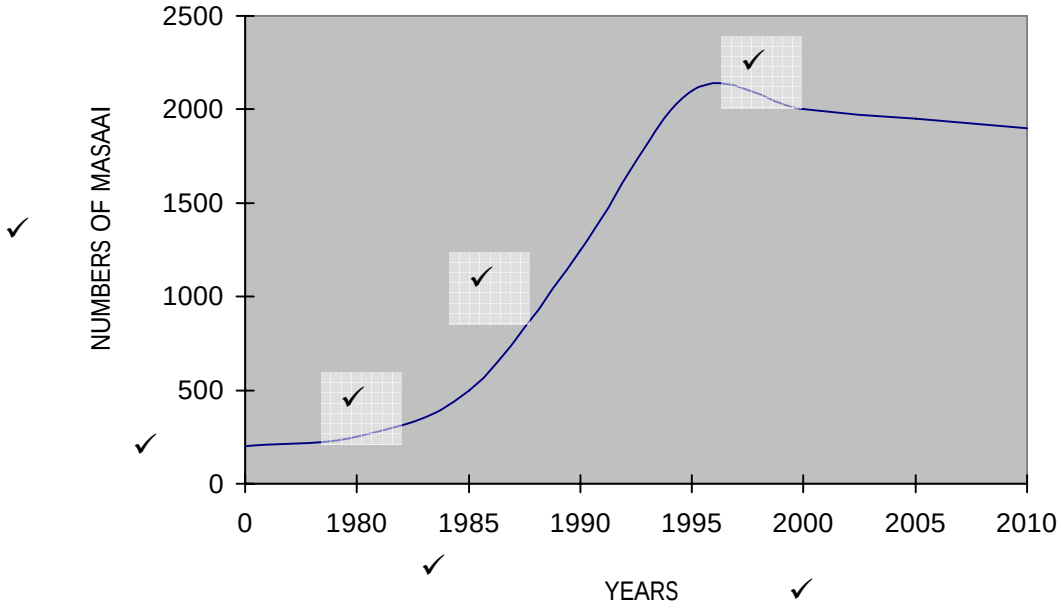
SECTION A

QUESTION 1

1.1.1 water✓ grass✓/plants (2)

1.1.2 Interspecific✓ (1)

1.1.3 (7)



1.1.4 Emigration✓/moving from another area
Births✓ (2)

1.1.5 Died from starvation✓
Old died due to stress of walk✓
Young got separated✓
People may have had to kill them for meat✓ (3)

1.1.6 Must say YES or NO/implied.
✓✓ for logical reason. (2)
[17]

1.2.1 Mark - recapture✓ (1)

1.2.2 P = 19 x 22/3 = 139✓✓ (2)

1.2.3 To prevent injury or death✓ so that the mice could mingle ✓ with the uncaptured population✓ (3)
[6]

1.3.1 using a quadrat✓
live transect (1)

1.3.2 Clear–coloured in open areas, blend with grass✓
Banded in dappled shade✓ of bushes therefore camouflaged✓ (2)
[3]

Question	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.4.6	1.4.7
Answer	**D**	**C**	**C**	**A**	**C**	**C**	**A**

[7 x 2=14]

1.5.1 1. D ✓ (4)
2. C ✓
3. E ✓
4. I ✓
5. G ✓
6. A ✓ (6)

1.6 1. geometric ✓
2. census ✓
3. natality ✓
4. extinction ✓ (4)
[10]

Total for Section A: 50 marks

SECTION B

QUESTION 2

2.1 57,6% = rural
Therefore 42,4% will be urban✓ (1)

2.2 $1032013 - 922011 = \frac{110002}{922011} \times 100$ ✓
= 11,9% / 12% ✓ (2)

2.2 Housing/Space:

Governments used to provide land and/or housing. ✓ Huge housing schemes✓ or else there will be vast slums/informal settlements. ✓

Environmental pollution:

Huge increase in urban people = huge sanitation✓ problem = either a need for contingency plans✓ or else whole-scale pollution of water catchments. ✓

Health:

Informal settlements/slums and high density living✓ plus poor sanitation✓ leads to increased spread of diseases such as TB✓ thus more clinics✓/drugs etc. (3 x 3 = 9)
[12]

QUESTION 3

3.1 Mortality (death) exceeds✓ natality✓ (births)
and emigration exceeds immigration✓
(or an understanding of the dynamics between the two, e.g. "Despite a low mortality there is still a high rate of population loss due to a high immigration out of the country.") (3)

3.2 Reduced air pollution✓ due to a lower demand for electricity. ✓
OR
Fewer taxpayers✓ to provide for social security/pensions/etc. ✓
ANY reasonable answer (2)

3.3.1 AIDS✓ is killing off adults✓ of reproductive age✓ and thus not only are people dying but proportionately fewer babies are being born. ✓
OR
Crime✓ is causing many people to emigrate✓ whereas in the rest of Africa they are unable to leave the country✓ due to low income✓.
ANY reasonable answer (3)
[8]

QUESTION 4

4.1 pumas✓ coyotes✓ wolves✓ (3)

4.2 predators keep the population of herbivores down, ensuring they do not over-utilise the environment. ✓✓ (2)

4.3 The ability of the habitat to provide food for a population without being destroyed. ✓✓ (2)

4.4

- In 1920, with the last predator shot, the deer population rocketed to 100 000. ✓
- The deer population was so high that it totally destroyed the grazing/grass/plants. ✓
- Consequently in about 1924 the population plummeted. ✓
- Due to starvation. ✓
- Between 1926 and 1935 the population reduced to approximately 15 000. ✓
- But the decline was not as steep✓/as drastic.
- **This was because the numbers had dropped below the carrying capacity ✓of 30 000 ✓✓ in approximately 1929.**
- And the vegetation was recovering✓ (7)

4.5

- The number of deer would have slowly increased to approximately 30 000. ✓
- The number of predators would have also increased. ✓
- Eventually the environmental resistance ✓ of the predation✓ and competition for food✓ would have ensured that the deer population remained at a stable 30 000. ✓ (4)

[18]

QUESTION 5

5.1 the increase in earth's temperature. ✓ (1)

5.2 Gases such as CO_2✓, methane✓ (both greenhouse gases) collects in the atmosphere✓ and cause heat to be retained. ✓ (3)

5.3 Electricity is generated in power stations✓, usually by burning of fossil fuels✓ such as coal✓/oil. The combustion✓ of coal/oil releases CO_2✓ thus increased demand lead to increased CO_2. ✓ (5)

5.4 The ice shelves/icebergs✓ in Antarctica✓ are melting✓/receding and so the penguin's habitat✓ is being destroyed✓. (May refer to the "Survival" of penguins✓). Penguins are at risk as they are losing breeding sites. ✓ (4)

Marking grid for paragraph on solutions (4 x 3 = 12)

	0	**1**	**2**	**3**
Solution	none	impossible to achieve	sensible but a rehash of old ideas	plausible and practical, innovative
Description/ Explanation of solution	poor/simplistic description	poor expression	ideas muddled but well laid out	excellent, logical explanation
Time line rating	none	only 1	only 2	all three included
Accuracy of rating	no idea	inaccurate	fair attempt	spot on assessment of all three

[25]

QUESTION 6

6.1 Humans produce sewage✓
which contains faeces ✓/urine✓.
organic material like blood/manure from farms + feedlots/waste from abattoirs. ✓
all this is biodegradable✓ if it reaches water
and decomposers will decompose it and thus ✓use up oxygen (4)

6.2 fish suffocate/cannot get enough oxygen and die✓ (1)

6.3 need to stop microscopic algae in water✓ from photosynthesising✓ and providing oxygen✓ thus affecting the results✓ (4)

6.4.1 phosphates provide nutrients✓ for algae/diatoms
thus they grow rapidly in number✓ this leads to an algal bloom and eutrophication of the stream
when the nutrients are depleted ✓ (14 Sept)
the population drops rapidly✓ (4)

6.4.2 the levels of oxygen will be very low ✓
when the dead algae are decomposed by bacteria✓/number of micro-organisms has increased (2)

6.4.3 Solution = treat effluent/recycle effluent water some other way✓/don't release efficient into stream
Reduce phosphates in effluent✓
Reroute outlet pipes from factories✓
Over the top! farm fish in the area to eat the algae✓
Any **two** good points (2)

[17]

Section C: Rubric (20)

EMP = environmental management plan
EIA = environmental impact assessment
SU = sustainable use

Criteria	Levels of Performance			
	1	2	3	4
Statement of opinion and conclusion of argument	Opinion is muddled.	Definite opinion is provided but argument rambling and conclusive.	Definite opinion is provided. Conclusion shows some loss of focus.	Opinion clearly and succinctly stated. All threads of the argument brought together to form a definite and focused conclusion.
MARKS (4)				
Content **Impact** of golf and eco estates on the environment	Superficial understanding of the effects of development on the environment. **AND** Insufficient application of facts to golfing and eco-estates.	Superficial understanding of the effects of development on the environment. **OR** Insufficient application of facts to golfing and eco-estates.	Understanding of the effects of the development of golfing and eco-estates, with some important aspects omitted.	Comprehensive understanding of the far-reaching effects of the development of golfing and eco-estates, supported by examples. For example: Water pollution, habitat destruction Water wastage in an arid land Hard surfaces/ roads - loss of water percolation Need for an EIA to foresee problems and to plan effectively, to minimise impact
Content **Sustainable use** of land and water resources, once estates are in situ.	Superficial understanding of the sustainable use of land and water resources. **AND** Insufficient application to golfing and eco-estates.	Superficial understanding of the sustainable use of land and water resources. **OR** Insufficient application to golfing and eco-estates.	Understanding of the sustainable use of land and water resources within the context of golfing and eco-estates, with some important aspects omitted.	Comprehensive understanding of the sustainable use of land and water resources within the context of golfing and eco-estates, supported by examples. For example: How water use and sustainability can be achieved and the need for ongoing monitoring. Potential for water wastage. Inclusion of natural areas, which are sustainable within estates. Need for a broad EMP to optimize SU. Win/win situation is possible with SU.

Content Management of **competing populations**:	No understanding of potential competition, and conflicting needs of different human populations and natural populations. Discussion totally out of context.	Superficial understanding of the possible conflicts of interest between – development and environmental sustainability; – the different interest groups involved. Response relates superficially to context	Understanding of the possible conflicting interests between development and environmental sustainability; and between the different interest groups involved, with some important aspects omitted. Response relates to context.	Comprehensive understanding of the possible conflicting interests between – development and environmental sustainability; – the different interest groups involved. Response relates clearly to context. For example: Rich vs poor Economic/human/development needs *vs* environment/natural population needs
Marks (12)				
Structure and language	Flawed in all aspects.	Flawed in two aspects.	Flawed in one aspect.	Logical structure to argument with good use of conjunctions. Correct scientific language used. Correct spelling of scientific terminology.
Marks (4)				