



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2009

LIFE SCIENCES: PAPER II

MARKING GUIDELINES

Time: 2½ hours

150 marks

These marking guidelines were used as the basis for the official IEB marking session. They were prepared for use by examiners and sub-examiners, all of whom were required to attend a rigorous standardisation meeting to ensure that the guidelines were consistently and fairly interpreted and applied in the marking of candidates' scripts.

At standardisation meetings, decisions are taken regarding the allocation of marks in the interests of fairness to all candidates in the context of an entirely summative assessment.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines, and different interpretations of the application thereof. Hence, the specific mark allocations have been omitted.

Please note that learners who provided alternate correct responses to those given in the marking guidelines will have been given full credit.

QUESTION 2**2.1**

- 2.1.1 (a) experimentation/scientific investigation (1)
 (b) observation over time/oral tradition (1)
- 2.1.2 (a) No. of cups of (Honeybush) tea drunk (1)
 (b) 0 or 4 (both values are expected) (2)
 (c) Data is inconclusive/no conclusion (1)
 (d) More people need to be surveyed/Volume of tea drunk/strength of brew/health/gender/age of participant (Other answers that will improve accuracy of experiment) (4)
- 2.1.3 (a) With collection of plants for a profitable business; medication/tea drinking there is an increased demand for the plant. This can lead to continued uncontrolled collection of plants; leads to extinction of the species (Any 2) (2)
 (b) cultivate the plants; store seeds in seed banks; preserve the plant in nature reserves; educate people about sustainable methods of growing/harvesting the plants; control the amount of plant material sold for export; tissue culture; campaign for conservation (Any 3) (3)
- 2.1.4 (a) For example: Drinking Honey bush tea; stimulates milk production. Statement (3)
 (b) For example: Suckling age of babies; mass of suckling babies; volume of tea drunk per day; same scale to weigh babies before and after a feed; strength of tea brew (Any 2) (2)

2.2

- 2.2.1 unsanitary conditions/stagnant water (1)
- 2.2.2 Roodepoort water had tested negative for cholera. (1)
- 2.2.3 (a) Monitor day on X-axis
 Increased no. of deaths on the Y-axis
 Title to the Graph (any heading)
 Line draw
 Scale relative to data
 Shape of curve (6)
- (b) washing hands after visit to toilet; wash fruit/vegetables before eating; boil water (high risk areas); add a small amount (1 teaspoon/5 ml) JIK to (25L of) water; eat food that is well cooked; wash hands before/after working with food; ✓ avoid unpeeled fruit or veg. Any 2 (2)

30 marks

QUESTION 3**3.1**

- 3.1.1 'critically endangered species' is a species at risk of disappearing forever;/with low numbers; that the species will become extinct in the near future; /brink of extinction; /gene pool very small. (Any 2) (2)
- 3.1.2 to identify species that need protection/conservation efforts; /to make people aware of the survival status/chances of a species. (Any 2) (2)
- 3.1.3 (a) Q and R
(b) P
(c) S
(d) R (4)
- 3.1.4 clearly stated; logical statement; original attitude; contrasted with attitude now, e.g. I have no interest in mammals and this extract has not changed my attitude. (4)
- 3.1.5 Action plan can include the following ideas:
Encourage conservation of habitats/game reserves so that mammals have space to live.
Removal/reduction in numbers of alien species that compete with indigenous species.
Reduction in pollution of the land/waterway – negative effect on mammals
Stop the greed/exploitation by trophy hunters.
Stop poaching and develop other economic means for rural people.
Do not assist the wildlife trade in mammals/smugglers. (Any 3) (3)

3.2

- 3.2.1 mating between closely related individuals (2)
- 3.2.2 reduction of the gene pool; more defects appear in the population; loss of variability; less resistance to diseases; increased effect of lethal genes; less allele variation; less chance (Any 3) (3)
- 3.2.3 (small) population (of E. European Jews) immigrates into SA; some people had the recessive gene for Tay-Sachs; inbreeding due to religious/cultural belief/arranged marriages; increased frequency of Tay-Sachs gene; 1 in 25; final population in SA now has a higher occurrence of gene than original group who immigrated to SA (Any 5) (5)

3.3

- 3.3.1 Pangaea (1)
- 3.3.2 Gondwana (Gongwanaland)/Laurasia (1)
- 3.3.3 *Glossopteris* grew in the central regions of Pangaea; over time the supercontinent broke up into Laurasia and Gondwana(land) and *glossopteris* was on the latter continent; this continent broke up into continents as we know them today; the continents are on separate tectonic plates which drift apart due to continental drift/volcanic action; and the *glossopteris* became extinct and fossil remains are found in the dispersion pattern/on different continents; which originally formed one habitat. (Any 3) (3)

30 marks

QUESTION 4

- 4.1 A species is a group of individuals capable of interbreeding; to produce fertile offspring; a group of individuals with a common ancestry; that closely resemble each other. (Any 3 or explanation related to niches) (3)
- 4.2 head shape; eye position; fin shape/size; /scale size; lips thickness; barbell (whisker) structure; mouth shape. (Any 3 features × 2 marks) (6)
- 4.3 The common ancestor; of the KwaZulu yellowfish are geographically isolated/ separated from Clanwilliam yellowfish; as the rivers are not connected. Mutations occur over time; so that eventually the two types could not interbreed; and became two different species. (5)
- 4.4 4.4.1 Largemouth yellowfish; smallmouth yellowfish (2)
 4.4.2 The largemouth yellowfish eats insects, crabs, fish; the smallmouth eats insects, clam, vegetation, algae (2)
 4.4.3 Different breeding times ; largemouth breeds in mid to late summer and smallmouth breeds in spring to mid-summer. Or occupy different niche; different diet; different habitat (with expansion of idea) (4)
- 4.5 Biodiversity maintained for future generations; food supply increase/angling/ edible/recreation/aquaculture (fish farming) (Any 2) (2)
- 4.6 For example: Galapogas finches – with different beaks; to eat different diets; found on the different islands. Or other example. (3)
- 4.7 Yellowfish have different head shapes/mouths; to feed on different diets; available in different rivers/or other relevant example that links to 4.6. (3)

30 marks**QUESTION 5 SUGGESTED RESPONSES**

Suggested responses with the different argument positions that could be taken. Sources can be used in a biased way for support of arguments.

A. **Position: Yes SA communities are aware** of global warming.

Content from source:

Source A – only 27% of surveyed never heard of it – remainder of communities were aware even if they knew nothing about it.

Source B – whilst SA has low awareness on International trends it still shows that more than 70% of SA are aware of the problem.

Information beyond source:

- Many SA have seen movies e.g. Day After Tomorrow/Inconvenient Truth so they are aware.

- People talk about local climate change and how it is affecting them, e.g. change in rain pattern/unexpected cold front and link it to global warming.

B Position: No SA communities are **not aware** of global warming.

Content from source:

Source A – (use stats differently) only 18% know about global warming.

Source B – SA has lowest International awareness rate with exception of Kenya.

Source F – only a small group of students have access to these facts and information not available to general population.

Information beyond source:

People not aware of global warming since they continue to use lots of electricity/burn fuel which releases CO₂ into atmosphere/chop down trees without replanting/consumer society attitudes/behaviour, etc.

C Position: Yes SA is **doing** enough about the problem.

Content from source:

Source C – Carbon capture and storage process on coal-fired power stations.

Source D – Wind generation; paper recycling.

Source E – Cree + Biblical belief systems support good stewardship of earth.

Information beyond source:

New transport systems, e.g. Gautrain and Rapid Transport System to reduce use of carbon fuels. Education of children – topic is in the curriculum. Recycling advertisements on radio/TV for glass.

D Position: No SA is **not doing** enough about the problem.

Content from source

Source C – Satisfaction survey, where the table shows only 15% very satisfied and 16% satisfied, so majority thinks government is not doing enough.

Source D – Huge rubbish dumps around cities/towns with little being done to reduce waste.

Source E – 'Live for today' belief results in people not being prepared to change behaviour.

Information beyond source:

Large scale solar/wave power generation is not happening.

Eskom issues	}	More CO ₂ in atmosphere
Taxi issues		

QUESTION 5 RUBRIC

	4	3	2	1
Content: Thoroughness	- All main topics covered. - Source detail very close to full potential. - At least (x) significant instances of information beyond the sources.	- All main topics covered. - About ¾ of potential detail cited. - One instance of significant information beyond the sources.	About half of potential detail cited.	Up to 1/3 of potential detail cited.
Content: Relevance	- Isolated incidences of minor repetition. - No digression.	- Repetition mostly avoided. - Some minor digression.	Around half is digression and/or repetition.	Mostly digression and/or repetition.
Supporting Argument, i.e. <u>for</u>	- Strongly supports a clear position. - Reasoning is very clear and succinct. - Flow is logical, showing evidence of clear planning (no after-thoughts). - Compelling with regular use of linking language. - No new information in conclusion. - Refer to at least one incidence of bias, anecdote, false argument, emotive language, etc. where relevant.	- Supports the position. - Reasoning is clear but bit lengthy. - Minor errors in flow. - Solid but not compelling; linkage sometimes missed. - No new information in conclusion.	- Max if no decision to support. - Reasoning correct hard to follow and lengthy. - One paragraph placed illogically. - Ordinary; some linkage is evident.	- Writing consists of facts with little linkage or reasoning. - Reasoning incorrect.
Fairness, i.e. Argument against		- Counter opinions regularly given (x). - A few instances (x) of merit to counter opinions.	- Counter opinions often given (x). - One instance of merit to counter opinion in order to get a 4.	Few counter opinions given. Merit to counter opinion not given.
Position				Clear decision made.
Presentation	- Tone highly mature and suited to scientific argument. - Excellent and appropriate language. - Good use of terminology. - Correct paragraphing with good transitions. - Interesting introduce, satisfying conclude. - No sweeping generalisation.	- Tone is consistent and suited to scientific argument. - Good and appropriate language. - Some good use of terminology. - Introduce and conclude have merit. - Some generalisation but not exaggerated.	- Tone is inconsistent and/or in places inappropriate. - Language is weak but appropriate. - No terminology. - Introduce and conclude present, no matter how weak.	- Writing is almost unintelligible. - Language exceptionally weak. - Inappropriate language.

(20)

20 marks

Total: 150 marks