ASSESSMENT & EXAMINATIONS
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NSC 2011 CHIEF MARKER'S REPORT

SUBJECT	LIFE SCIENCES

PAPER	1 (ONE) VERSION 1 (ONE)

DATE OF EXAMINATION:	NOV 2011	DURATION:	

SECTION 1:

(General overview of Learner Performance in the question paper as a whole)

In question 1 the majority of candidates performed well, because the candidates are used to these types of questions, which are multiple choice, terminology, connecting column A and B and interpreting diagrams. There are still those who struggle to obtain 50%. Learners do not follow instructions on the question papers It also became clear that learners were trying to guess the answers for certain multiple choice questions.
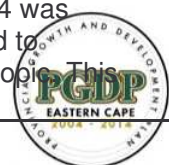
In questions 2 to 4 candidates did not perform very well. It seems as if many candidates had trouble understanding the questions.   When candidates were asked to explain, discuss or suggest, they did not always give the correct responses. They wrote one word answers instead of discussing and this had a bad effect on their performance. This could be a language problem or that candidates are not use to these types of questions.

 It also seems as if learners have a lack of background skill on answering questions. It seems as if learners have a general idea but cannot deal with answering specific questions where they have to apply their knowledge. This could be due to a lack of training in this type of question, or a lack of revision, or background knowledge.

Some markers commented that it seems as if some of the work was not taught, or all topics were not covered by the learners. This could be due to the new content in version 1 with which some teachers are not yet familiar, or due to time constraints to complete the very comprehensive syllabus.

It also became clear that learners have problems answering higher order questions. They had problems with the concepts "tabulate", "supply a hypothesis" and "draw a conclusion". They were also not able to distinguish between terms like polygenic and polyploidy.

Candidates were also not used to the new way in which the essay question in 4.4 was formulated. They experienced problems in identifying the topics that they needed to discuss and they also could not determine how much they had to write on each topic. This resulted in some candidates writing unnecessary

SECTION 2:

Comment on candidates' performance in individual questions
(It is expected that a comment will be provided for each question on a separate sheet).

QUESTION 1
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered.
This question was answered well and the average mark for the 100 sample scripts was 27out 50.   Question1.1.1 Was the multiple choice questions which the learners are used to and therefore they did not experience any problems.   In question 1.2 candidates performed poorly because they did not know their terminology.   Question 1.3 Column A Column B: Candidates showed a lack of knowledge and could not link the two columns to each other and thus performed poorly in this section. This question requires the learners to be sure about what they have learnt (Terminology) otherwise they perform poorly. Candidates cannot differentiate between the terms speciation and species as well as extinction and extinct. Language barrier is also a contributing factor.   Question 1.4 Required the candidates to write down the genotypes and phenotypes of the snapdragon plants, but some of them went to the extent of drawing a genetic crossing which was not required. There were however candidates who obtain full marks in this question.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
1. Candidates had a lack of knowledge and did not know their terminology.   2. Could be that syllabus was not completely covered   3. Candidates could not interpret the pedigree diagram in question 1.4
(c) Provide suggestions for improvement in relation to Teaching and Learning
1. Candidates must be taught to interpret questions   2. More emphasis must be placed on tests so that candidates get use to the questions.   3. Expose candidates to external papers and exemplars.   4. Full support from department, with study material and training.   5. Improve teaching of terminology by using glossary e. g booklets of terminology.   6. Train candidates to interpret pedigree diagrams
(d) Describe any other specific observations relating to responses of learners
Candidates experience language barriers. According to some markers the poor response of the candidates could also be due to a lack of textbooks and also a poor culture of learning.
(e) Any other comments useful to teachers, subject advisors, teacher development etc
1. Common tasks and tests must be set to ensure a high standard of teaching.   2. Decrease the number of tasks and projects and concentrate on more tests and exposure of learners to exemplar papers and worksheets.   3. Develop a booklet with terminology which could be used at schools.   4. Teachers good improve or strengthen this section by giving terminology tests.

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QUESTION 2

(a)	**General comment on the performance of candidates in the specific question. Was the question well answered or poorly answered?**

This question was answered well and the average mark for the 100 sample scripts was 13 out of 30.

Question 2.1.1: Haemophilia: Many candidates have got the general idea of this topic and thus performed well. Some candidates were misled by the heterozygous mother and were unable to write the correct genotype for the parents and thus lost marks in this question. The fact that the offspring were grouped under normal and haemophilic only in the memo caused certain candidates who distinguished between normal and carrier in the females, to lose marks. In some cases it seemed as if there was a lack of understanding of what is meant by sex-linked diseases.

Question 2.1.2: Many candidates calculated the percentage of the male children that would be haemophilic incorrectly. They calculated the percentage for all the children instead of only the males and thus lost marks.

Question 2.1.3: Candidates experienced problems to express themselves and did not obtain all their marks in this question were they had to explain why the father could not be a carrier.

Question 2.2: Genetic Engineering: Candidates gave many different answers for this question resulting in the markers experiencing difficulty in linking the candidates answers to the memorandum. Some candidates were very negligent and swapped around the advantages and the disadvantages because they are used to the advantages being asked first and then the disadvantages.

Question 2.3: Height of Humans: Candidates did well in this question.

Question 2.3.1: Candidates performed well in the drawing of the histogram. Some candidates were confused with the dependant and independent variable, which caused them to lose marks.

Question 2.3.2: Many learners performed very poorly in this question, on polygenic inheritance as it is a new concept in the syllabus and not enough time was spent on this topic during teaching.

Question 2.3.3: Which was on how polygenic inheritance took place, was answered very poorly because many candidates did not know how this inheritance took place. They referred to one gene where the memo referred to genes at different loci. Some learners knew this answer but did not explain it according to the memorandum and markers had to read into their answers to be able to credit them with some marks.

Question 2.3.4: Candidates did not understand that they had to state two other causes or factors than genetic causes or factors that would influence height and thus performed poorly in this question, although the memorandum required very simple answers. This could also be due to a language barrier on behalf of the learners.

(b)	**Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.**

1. Candidates did not have a good understanding of the new concept of polygenic inheritance and thus could not answer the question properly.

2.Other candidates swapped around the X and Y-axis on the graph and lost marks for that. 3.Some candidates also drew a bar graph instead of a histogram.

(c)	**Provide suggestions for improvement in relation to Teaching and Learning**

1. Standardized textbooks should be implemented which contain enough information on the topics prescribed in the assessment guidelines.
2. Workshops must be conducted timeously when new content is introduced into the syllabus.
3. Teachers need to be trained in genetics and other concepts related to inheritance and biotechnology.
4. Candidates must also "be trained" to answer these types of questions by exposing them to exemplars.
5. Candidates should be trained in the different types of graphs.

(d)	**Describe any other specific observations relating to responses of learners**

1. Candidates all again experienced language barriers and struggled to express themselves.
2. The drawing of graphs has improved a lot. Candidates must just be taught to distinguish between the different types of graphs, like line and bar graphs and histograms.
3. In question 2.1.2 it became evident that candidates are not able to apply their theoretical knowledge when asked to calculate the chances of parents having a male child who is haemophilic. Attention must be given to this.

(e)	**Any other comments useful to teachers, subject advisors, teacher development etc.**

1. Strict and sincere professional support and monitoring in the classroom is required.
2. All efforts must be made to ensure that the standard of teaching is the same in all schools.
3. More exercises must be given to candidates to familiarise them with the type of questions that are asked in the examinations.
4. Teachers must use the same terminology that is used in the examination papers to familiarise the candidates with the language used in the papers.

QUESTION 3	

(a)	**General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?**

This question was answered poorly and the average mark for the 100 sample scripts was 11 out of 30.

Question 3.1: Evolution: This question was confusing as some learners were misled by the question because they did not read the question properly and instead of naming the species, they gave the letters of the respective species. The two options were however accommodated in the marking guideline.

Question 3.1.2: This question required learners to tabulate "three visible structural differences" between the three diagrams. The candidates however did not use the diagrams and just used theoretical knowledge to answer this question, which was not always applicable to the diagrams.

Question 3.2: This question where to lines of evidence were asked to support the idea that the humans originated from Africa was poorly answered and it emphasized that learners did not understand evolution or that this section was not taught properly.

Question 3.3: Peppered-moths:
Question 3.3.1: This question was also poorly answered. Many learners were not able to formulate a hypothesis. They reverted to asking a question.

Question 3.3.2: The question stated that learners had to suggest factors that would decrease the validity of the investigation. Once again candidates did not understand the concept of "suggest" and only wrote words instead of explaining the factors that would affect the validity of the results.

Question 3.3.3: This question was answered very poorly as candidates did not read the question properly and did not explain natural selection in relation to the peppered-moths in the polluted environment. They just gave a general explanation of natural selection without applying their knowledge to the practice or using the information in the supplied table.

Question 3.4: The candidates confused sympatric speciation with allopatric speciation and they could also not explain or describe how sympatric speciation takes place. This could be due to a language problem or due to the fact that this section of work was not done with the candidates.

(b)	**Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.**
	The main problem in this question was that candidates did not read the questions properly as explained in question 3.1 on evolution or did not understand the question as in question 3.3.3 where they had to use information from the table in the question paper.
(c)	**Provide suggestions for improvement in relation to Teaching and Learning**
	1. Workshops on evolution must be done to improve the teachers knowledge so that they can teach the candidates properly. 2. Exemplar questions must be used. 3. Subject advisors must supply additional information to schools and teachers. 4. Teachers must ensure that topics like the formulation of a hypothesis and the drawing of a conclusion from research data is taught to candidates from grade 10 -12 to familiarize the candidates with the procedures of research, analyzing of data and drawing of conclusions.
(d)	**Describe any other specific observations relating to responses of learners**
	Candidates are not reading questions properly. Many of the candidates do not understand the instructions. Candidates have no logical arrangement of facts. Candidates know the theory of certain aspects but they cannot apply the theory as required in question 3.3.3 where they had to explain natural selection in a polluted environment as shown in the table in the question.
(e)	**Any other comments useful to teachers, subject advisors, teacher development etc.**
	The teachers must ensure that topics like the formulation of a hypothesis, the interpretation of data and the drawing of conclusions is done from grade 10 – 12. Teachers must also make use of exemplars and additional teaching aids to familiarise learners with the Life Sciences content.

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QUESTION 4
(a) **General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?**

This question was answered poorly and the average mark for the 100 sample scripts was 15 out of 40.

Question 4.1: DNA structure:
Question 4.1.1: The identification of the DNA molecule was answered well as the candidates are familiar with this content.

Question 4.1.2: Some candidates mixed up the labels of the parts of the molecule as they did not know the structure of the DNA molecule. This can be attributed to carelessness because some candidates just wrote sugar instead of deoxyribose and phosphorus instead of phosphate.

Question 4.2.1: This question was answered very poorly. Candidates did not understand the question and explained the function of DNA profiling rather than the process of DNA profiling.

Question 4.2.2: Candidates performed poorly in this question and just wrote single words instead of explaining factors or reasons why the suspect would not be found guilty of the crime. This could be mainly attributed to a language problem as candidates did not understand what was actually asked.

Question 4.3: Protein synthesis:
Question 4.3.1: Candidates misunderstood this question and explained DNA transcription instead of describing the role of DNA during transcription and thus lost marks in this section.

Question 4.3.2: This question was answered very well as the candidates are familiar with the content.

Question 4.3.3: The majority of candidates answered this section where they were asked to link amino acids with the messenger RNA very well. There were still however candidates who were unable to work backwards when given information to either come up with the codons for mRNA or determine the base sequence of DNA when tRNA is given.

Question 4.4: Essay question: this question was answered very poorly because candidates were unable to interpret the question. They were also not able to determine the sub-divisions and the mark allocations for each subsection and therefore they were unable to write a well structured essay. Most of the candidates just discussed meiosis instead of selecting the factors in meiosis which contribute to genetic variation. This resulted in the candidates writing a long essay without subsections from which the markers had to look for relevant marks. Many of the learners struggled to explain how meiosis led to Down's Syndrome and Polyploidy. The candidates were also not able to describe the advantages of Polyploidy in agriculture. Many candidates confused Polyploidy with genetic engineering.

(b)	**Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.**
	1. Candidates interpreted question 4.2 incorrectly and thus lost marks. 2. The candidates were not used to the formulation of the essay question in this way where no subsections or mark allocation was given. They were also not able to plan the essay properly and present it under the applicable headings.
(c)	**Provide suggestions for improvement in relation to Teaching and Learning**
	1. The new format of the essay question must be highlighted to teachers. 2. The teachers must train the candidates to interpret, plan and structure essay questions to enable them to answer these questions properly during the examinations. 3. All questions in the question paper must be set on approved textbooks that fully comply to the assessment guidelines.
(d)	**Describe any other specific observations relating to responses of learners**
	1. Candidates experienced problems to interpret and understand the questions. 2. Candidates were not able to write a properly structured essay. 3. Candidates' knowledge with respect to the role of abnormal meiosis in the formation of Down Syndrome and Polyploidy is very limited.
(e)	**Any other comments useful to teachers, subject advisors, teacher development etc.**
	1. Conduct workshops on the new content of version 1 2. Try to stay with the same content for Life Sciences grade 12 as this would ensure that teachers are familiar with the content and better teaching will take place which will lead to better results. 3. Teachers must ensure that their teaching is strictly according to assessment guidelines. If they are not sure of how much detail is required in certain topics, they must contact their subject advisor of provincial curriculum specialist. This will ensure that candidates are properly prepared for the examination.

SIGNATURE OF CHIEF MARKER: _____

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Quest for Excellence through high powered performance

building blocks for growth.

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