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NSC 2016 CHIEF MARKER'S REPORT

SUBJECT	AGRICULTURAL SCIENCES		
PAPER	2		
DATE OF EXAMINATION:	21 NOVEMBER 2016	DURATION:	2½

SECTION 1: (General overview of Learner Performance in the question paper as a whole)

- (a) The general performance for Agricultural Sciences P 2 is lower compared to the previous year. Learner's performance has dropped this year. There is a slightly decrease in the number of learners who obtained levels 4, 5, 6 and 7.
- (b) **Section A : Question 1**
 - The performance has slightly improved, with few scored below 5 and the majority between 15 and 24 out of 45 marks.
 - There are few cases of exceptionally good work with none scored a total of 45 marks.
- (c) **Section B :**
 - The majority of learners performed below average in **Section B**.
 - **QUESTION 2** had the lowest marks scored by the candidates, followed by **QUESTION 3**. Learners performed poorly in these questions because they struggled with calculations, formulation of hypothesis, embedded questions and the analysis of data response questions.
- (d) Learners with a language barrier experienced problems in the answering of scenario type Questions due to the nature of paper 2 that requires too much reading with understanding.
- (e) Candidates who experienced difficulty in interpreting questions find it challenging to correctly phrase their responses.
- (f) Processing was mostly asked in the question paper, and that brought a confusion to the learners because they never thought that a different answer is required, they repeatedly provided the same answer whenever the term "**processing**" appears in the question paper.

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?

Average mark from the sample of 100 :		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE
1..1.10	<ul style="list-style-type: none"> Genetics: -The picture for the chromosome mutation looked as if it is on the progress rather than being stable, as a result all the options given fit to be used as the correct responses. 	<ul style="list-style-type: none"> 48% Passed. 52% Failed
1.2.1	<ul style="list-style-type: none"> Sustainable Agricultural Marketing: - A form of sustainable measure directed at consumers taking environmental concerns into considerations. 	<ul style="list-style-type: none"> 48% Passed 52% Failed
1.3.2	<ul style="list-style-type: none"> Financial Management Systems (Capital):- Movement of money for a specific period in a business. 	<ul style="list-style-type: none"> 41% Passed 59% Failed
1.4.3	<ul style="list-style-type: none"> Genetics:- Using fats as carriers of a required DNA through the cell membrane into the nucleus. 	<ul style="list-style-type: none"> 6% Passed 94% Failed

- **Question 1 (Section A)** was fairly answered by most of the candidates.
- The majority got between 15 and 25 marks out of 45 marks.
- Very few candidates scored above 40 marks in Question 1.
- Poorly performed questions are 1.1 7, 1.1.10, 1.2.1, 1.3.5, and 1.4.3.

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

- The average performance in Question 1 may be caused by a number of factors such as : Content gap and failure to cover the syllabus by both educators and the learners in various schools, effective use of tuition time, inappropriate use of the revision time, ineffective drilling of learners in subject concepts and terminology and the use of one textbook.
- In some sub questions the average performance might be caused by :
 - Inability to choose the correct combination because of the way the question was phrased in 1.1.4.
 - Unclear and ambiguous options to the statement and diagram in 1.1.10
 - In question 1.3.2 some learners wrote "capital flow" instead of "cash flow".
 - Learners could not answer 1.3.3, Most were writing multiple / many genes and that is a clear indication that candidates did not master the scientific agricultural concepts during the year in their schools.

- In 1.3.5 candidates were giving inbreeding and did not write inbreeding depression as it was required.
- In 1.4.1 most learners could not differentiate between processing and value adding.
- Very few candidates answered 1.4.3 correctly, most of the candidates could not because the concept LIPOFECTION is only found in one textbook called the study and the master.

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

- Different prescribed agricultural textbooks must be used in schools by the learners and educators.
- Pictures, graphs and calculations must be included in question 1 when classroom activities are given for the learners to get used in analysing and interpreting them.
- Educators should guide the learners on how to use past question papers with understanding in order to provide the correct response.
- A comprehensive bank summary of concepts should be developed by both the subject advisers and the agricultural sciences educators for the learners.

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

- Very few learners got marks for Question 1.4.3 because the answer is found in study and master text book only.
- In 1.4.5 learners gave incorrect different responses such as inbreeding or inheritance instead of inbreeding depression.
- Some learners left gaps in section A which is a clear evidence that the syllabus was not finished in some schools.

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

- Educators should have a minimum of three to four different prescribed text books.
- They should make notes that are easy to read and understand to simplify the content for the learners.
- District common assessment tasks that are up to the standard of the national papers must be developed by both the subject advisers and the educators that are teaching the subject.
- Concepts must be taught in the way they are assessed when teaching the subject.
- Scientific approach must be used when teaching the subject and this must be emphasised in order to develop scientific skills to our learners.
- Educators can prepare together, share the limited resources and skills they have for teaching and learning.

QUESTION 2

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

Average mark from the sample of 100 :		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE
2.1.1 (a)	<ul style="list-style-type: none"> Marketing function:- Products are taken from the farm to the market. 	<ul style="list-style-type: none"> 54% Passed 46% Failed
2.1.1 (b)	<ul style="list-style-type: none"> Marketing function:- Products are kept on a farm before they are transported. 	<ul style="list-style-type: none"> 42% Passed 58% Failed
2.1.2 (b)	<ul style="list-style-type: none"> Marketing function:- Products are kept in a cool place to give them long shelf life. 	<ul style="list-style-type: none"> 51% Passed 49% Failed
2.3.1	<ul style="list-style-type: none"> Hypothesis:- Formulate a hypothesis. 	<ul style="list-style-type: none"> 58% Passed 42% Failed
2.5.2	<ul style="list-style-type: none"> SWOT analysis:- Explain how the farmer may use strengths and opportunities in the schematic representation to improve the enterprise. 	<ul style="list-style-type: none"> 71% Passed 29% failed

- Question 2 was the worst poorly performed question by most of the learners with the lowest score of zero and the average score of 7 marks.
- The highest score recorded is 25 marks.
- Candidates experienced difficulty in interpreting the questions as a result they could not correctly identify the responses from the scenario in 2.1 and the table in 2.2
- In Question 2.1.1 candidates could not identify the agricultural marketing functions from the scenario as they were instructed, they wrote any marketing functions they know e.g. Physical functions and facilitating functions, instead of writing Transportation for (a) and Storage for (b)
- In 2.1.2, (b) learners could not answer the question well, instead of writing “cold storage” as an economic term, most wrote “storage “only.
- In Question 2.2.4 learners could not clearly differentiate between the marketing strategy and the marketing approach. Most candidates wrote free marketing instead of writing Marketing mix as the correct answer. These Questions also confused the learners because the responses they had to write were already given as answers to Question 2.2.3 as a result they thought that a different answer is required.
- Question 2.3.1 was the worst poorly performed question by the candidates, because hypothesis is not included in the Grade 12 ATP. Learners struggled to answer this question. Candidates responded by writing the law of demand which is not the correct answer.
- In 2.4.1 learners did not understand what was asked, almost all responded by writing “Green fresh cabbage “, instead of writing Green or Eco labelling. This was caused by the language barrier. The candidates confused the picture with an advert.

- In Question 2.4.2 and 2.4.3 learners became confused and scored less marks because they gave different responses from what was asked in the question paper. Both Questions 2.4.2 and 2.4.3 have the same answers.
- Candidates did very well in 2.5.1. They were able to link the statements correctly with the aspects of SWOT analysis.
- In Question 2.5.2 Candidates attempted to give correct responses, but did not state clearly which response correspond with strengths and which one correspond with opportunities.
- In Question 2.6 Learners gave general responses to answer this question, although the responses are straight forward in the textbook. They confused the Entrepreneurial success factors with managerial principles, hence they had responses such as : control, planning, decision making skills etc.

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

- Most questions in question 2 were embedded to each other, and that put learners at a disadvantage of losing some marks due to the failure to respond positively or correctly on the first response, for example 2.4.1 to 2.4.4. which is out of 5 marks.
- Question 2.5.2 was also embedded to 2.5.1 and learners responded poorly because they wrote the examples that are from the text book rather than the very simple responses from the scenario. For example latest infrastructure, strong financial positions etc.
- Learners could not handle the data response questions.
- In Question 2.3.4 learners could not see the relationship between the price and the profit instead they related the impact of the price with demand and supply.

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

- Learners should be exposed to activities that enable them to analyse and interpret the data.
- Learners should be taught on how to distinguish between marketing approaches and marketing strategies.
- A variety of text books must be used by the teachers to cover all the content.
- Learners should also be taught Agricultural Scientific Concepts
- Educators must be well provided with a variety of textbooks and other relevant material to the prescribed content that can assist in the teaching and learning of agricultural sciences.



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

- Mark allocation must be used as a guide to answer Questions.
- Teachers should guide the learners on the use of past exam question papers with the emphasis being on concepts.
- Learners should be encouraged to answer questions according to the given instructions.
- Subject advisers must monitor the subject teachers regularly to check the effective teaching and learning together with the syllabus coverage in schools and to offer assistance where needed.
- Content gap workshops should be organised regularly by the subject advisers to equip with knowledge the inexperienced new teachers in the field of teaching.

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

- Learners need to plan their studies well prior the exams.
- Teachers must focus on all aspects of the content that are listed on the examination guidelines.
- Learners should relate the data in the scenarios with the information they already know.
- Learners should be made aware by both their educators and the subject advisers that their responses must be valid and be based on the facts and be in line with the question.

QUESTION 3

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

Average mark from the sample of 100 :		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE
3.2.3	<ul style="list-style-type: none">• Labour Legislation:- Give TWO examples of labour legislation that could be used to challenge the employer.	<ul style="list-style-type: none">• 66% Passed• 34% Failed
3.4.1	<ul style="list-style-type: none">• Cash flow budget:- Draw up a mini cash flow budget for ONE week.	<ul style="list-style-type: none">• 70% Passed• 30% Failed
3.4.2	<ul style="list-style-type: none">• Net cash Income:- Determine the net cash income for ONE month.	<ul style="list-style-type: none">• 55% Passed• 45% Failed
3.4.3	<ul style="list-style-type: none">• Net worth:- Explain whether the net cash income of this business can be guaranteed on the basis of its cash flow.	<ul style="list-style-type: none">• 32% Passed• 68% Failed

- Question 3 is another question that increased the poor performance of the learners in Agricultural Science P2.
- The lowest score recorded in Question 3 was 2 marks and the highest score recorded was 24 marks.
- The poor performance in Question 3 was a result of the inability of the learners to calculate using the correct formula, and the poorly plotted graphs without headings and units.

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

- In question 3.1.1 learners could not relate all the three variables simultaneously, as a result the majority scored between 3 and 4 marks in this question.
- The mark on the correct type of a graph could not be scored by some learners due to the failure to draw a line graph instead of a bar graph.
- Some candidates provided only two instead of three variables in the heading of a graph, as a result they lost 1 mark for the heading, and lost another 1 mark for not writing both units.
- Question 3.1.3 and 3.1.2 were embedded to 3.1.1 and that caused a serious loss of marks as the learners could not relate them to the graph and interpreted them correctly.
- Learners could not answer well Questions 3.3.1 to 3.3.4 on the methods that are used to increase the labour productivity in agriculture.
- Calculations in questions 3.4.1 to 3.4.3 resulted in the poor answering of this question.
- In question 3.2.3 learners were giving any labour legislation, rather than giving the legislation that could be used to challenge the employers who are exploiting the employees. For example:- Some wrote Skills development, Occupational Health And safety Act etc.
- Question 3.4 was also poorly answered by the candidates because of the combination of weeks and months as a result learners could not draw up the mini cash budget for one week and the net cash income for the month.
- Learners did not understand the content on the scenario, as a result they could not determine the net cash income in 3.4.2.
- Very few learners managed to score 2 full marks in 3.4.3 because the learners' responses were based on the results of the net cash income in question 3.4.2 rather than on the results of a mini cash flow budget in 3.4.1 as it was required.
- Candidates could not distinguish and identify the income and expenditure items from the scenario as a result they came out with incorrect net cash income figures.
- In Question 3.5.1 learners could not associate the given statements with the correct problems that are associated with capital as a production factor, as a result they swiped the responses of Question 3.5.1 and Question 3.5.3
- Most learners managed to answer correctly Question 3.6.

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

- Teachers are encouraged to give learners all possible tasks related to graphs with more than two variables to prepare them for examinations.
- A clear instruction should be made to guide the learners on the differences between all the financial records covered by the syllabus.
- Learners should be given more scenario type questions as class works and homework.

(d) Describe any other specific observations relating to responses of learners
<ul style="list-style-type: none"> ➤ Different legislation should be emphasised when teaching and learning occurs in schools. ➤ Learners should be encouraged to read the questions first in order to provide correct answers according to the given instructions. ➤ Teachers must teach according to the annual teaching plan to cover all the expected content on time and to cater for revision.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.
<ul style="list-style-type: none"> ➤ Teachers should guide the learners on how to process data in tables and graphs. ➤ Learners should be taught on how to relate the data provided in the graphs and tables to the content.

QUESTION 4

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

Average mark from the sample of 100 :		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE
4.3.1	• Variation (Genetics):- Animals at higher altitudes have darker pigmentation.	<ul style="list-style-type: none"> • 27% Passed • 73% Failed
4.3.4	• Variation (Genetics):- Herefords kept in colder regions have thicker hair.	<ul style="list-style-type: none"> • 35% Passed • 65% Failed
4.4.1	• Polygenic Inheritance (Genetics):- Determine the net production of a laying hen with genotypes BbGgKk.	<ul style="list-style-type: none"> • 30% Passed • 70% Failed
4.4.2	• Polygenic Inheritance (Genetics):- Name the genotype that will result in 90 eggs.	<ul style="list-style-type: none"> • 37% Passed • 63% Failed
4.5.2	• Calculation:- Determine the number of heifers if 12% of the total number of heifers are selected.	<ul style="list-style-type: none"> • 61% passed • 39% Failed
4.6.3	• Genetic Modification (Genetics):- Suggest TWO socio-economic implications that plants produced from the technique in QUESTION 4.6.1.	<ul style="list-style-type: none"> • 36% passed • 64% Failed

- Learners performed poorly in this question but much better compared to question 2 and 3.
- 2 marks is the lowest score recorded in this question and the highest score is 28 with an average of 14 marks.
- Sub Questions on the ratios, indication of the environmental factors causing variation and the last question on socio-economic concerns have greatly contributed on the poor performance of this question.
- Content gap on Basic Agricultural Genetics might be a cause of this poor performance.

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

- Language problem is a major concern to this poor performance.
- Syllabus coverage in some schools might have played a role because some learner's responses were extremely out of the expected content for question 4. For example they wrote "artificial insemination" or "cloning" and some even wrote "oogenesis".
- Question 4.1.1 was only answered correctly by 31% of the candidates who wrote Agricultural Sciences P2, 69% of the candidates got it wrong because some assumed that the LETTER B for the second parent in the schematic representation represented the allele for a dominant genotype B. This assumption was caused by the lack of understanding the scientific symbols for a ram and a ewe written in the boxes for the parents 1.
- Learners scored a full mark for question 4.1.2 but could not give a correct reason to support their answer in Question 4.1.3 as a result most candidates scored 0 mark for 4.1.3.
- Question 4.1.4 was poorly answered by the learners. Very few were able to score 3 mark for that question. Most learners responded by writing "black and white for F and G", and some only wrote without indicating whether the answer is for F or G or H.
- Question 4.1.5 was poorly answered by the learners. Those who attempted to answer this Question, responded by writing 3 and 1 or 1, 2 and 1 as if they were instructed to write the phenotype and the genotype instead of writing the ratio as 3:1 for the phenotype and 1:2:1 for the genotype.
- Some learners in Question 4.1.5 swiped the responses by writing the phenotype ratio for the genotype ratio and vice versa. For example Phenotype 1:2:1, then genotype 3:1.
- The question on the environmental factors causing variation in 4.3.1 to 4.3.4 was poorly answered.
- In Question 4.3.1 candidates responded by writing sunlight instead of light intensity
- For Question 4.3.3 they wrote slope or geography confusing topography with grade 10 soil forming factors where geography is also regarded as topography.
- 4.3.4 Learners lost marks because they omitted to write "**LOW**" as the key word for the correct response, and only wrote "**temperature**". Writing of **low** as a required response is a result of the instruction from the question : "**Herefords kept in colder regions have thicker hair**"
- In Question 4.4.1 learners could not get to 70 eggs as the correct answer because they mixed the genotypes. Some had no idea of what was asked and that gave an indication that the content was not clearly delivered to them.

- Both Questions 4.4.2 and 4.4.3 were poorly answered by the learners because they are embedded to 4.4.1 and their responses depended on that question. None of the candidates wrote quantitative as an alternative answer.
- In Questions 4.5.2 and 4.5.3 Learners did not answer the questions very well, some wrote 425 or 51 heifers only without showing all the steps that has lead them to reach to the answers. This might be caused by the instruction that did not instruct them to determine by calculating but educators are advised to drill their learners to consider the marks allocated when answering the questions.
- In Question 4.6.1 learners poorly answered this question because they could not differentiate between the technique and the organism as a result they responded by writing genetically modified organism or GMO instead of genetic modification / engineering.
- Question 4.6.3 was only answered correctly by few learners, the rest only wrote the advantages of genetic modification instead of the socio-economic effects of food from genetically modified plants.

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

- Learners should be taught how to calculate to score the maximum marks.
- Teachers must teach all the patterns of inheritance for the learners to be able to know the difference between them.
- All the content according to the annual teaching plan must be taught to the learners.

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

- Learners do not know the appropriate formula for calculations.
- Learners ignored the instructions in 4.1 as a result they could not answer its sub questions correctly.

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

- Teachers must give special attention to the genetic diagrams and crosses.
- Subject advisers must organise workshops for the agricultural science educators to fill the gap on the content.

QUESTION 5

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

Average mark from the sample of 100 :		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE

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

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

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

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

QUESTION 6

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

<i>Average mark from the sample of 100 :</i>		
SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE% FROM SAMPLE

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

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

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

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