

**EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE**  
Home of Assessment and Examinations. Zone 6,Zwelitshha 5600  
REPUBLIC OF SOUTH AFRICA website : [www.ecdoe.gov.za](http://www.ecdoe.gov.za)

## 2024 NSC CHIEF MARKER'S REPORT

<b>SUBJECT</b>	Agricultural sciences	
<b>QUESTION PAPER</b>	1✓	
<b>DURATION OF QUESTION PAPER</b>		2,5 HOURS
<b>PROVINCE</b>	EASTERN CAPE	
<b>NAME OF THE INTERNAL MODERATOR</b>	MR T. MFACA	
<b>NAME OF THE CHIEF MARKER</b>	MR M.P MASHIQA	
<b>DATES OF MARKING</b>	01 – 15 DECEMBER 2024	
<b>HEAD OF EXAMINATION:</b>	MR E. MABONA	

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

<b>Average mark from the sample of 100 for the whole paper:</b>		<b>77 out of 150 marks</b>	
<b>TOPIC OR ASPECT TESTED</b>	<b>LOWEST MARK</b>	<b>HIGHEST MARK</b>	<b>AVERAGE % FROM SAMPLE</b>
<ul style="list-style-type: none"> <li>• Animal Nutrition</li> <li>• Animal Production Protection and Control</li> <li>• Animal Reproduction</li> </ul>	<b>07</b>	<b>146</b>	<b>52,0%</b>
<p>The paper was fair but there was a lot of creativity that required learners to apply their analysis skills. Most learners performed moderate in section A, obtaining marks between 18 -45. Approximately 25% of learners managed to get 30 marks and above.</p> <ul style="list-style-type: none"> <li>• There was a lot of improvement in section A performance.</li> </ul>			

<ul style="list-style-type: none"> <li>• There was an improvement in combination questions, matching columns and terminology. However, some terminology questions were a hard nut to crack for example: QUESTION 1.3.3, 1.3.4 and 1.4.1.</li> <li>• Spelling was still a challenge that resulted in candidates losing marks.</li> </ul>
<ul style="list-style-type: none"> <li>• Section B was fair in some questions but some candidates did not analyse and interpret some of the sub questions. More than 75 % of the questions in Section B were asked based on stimulus, of which low performing learners were unable to score marks. There was about 61% of candidates scored marks between 12-35 in all the questions (Question 2, Question 3 &amp; Question 4).</li> </ul>
<ul style="list-style-type: none"> <li>• Calculations need more attention as 75 % of the candidates struggled to score full marks in question 2.</li> <li>• Candidates struggled to score full marks especially in in QUESTION 2.6.4 and 2.6.7</li> <li>• There is also an indication that some candidates do not use calculators as was shown by in complete calculations with missing final answers.</li> </ul>
<ul style="list-style-type: none"> <li>• The stimulus/picture in question 3.1 was not clear, as a result 92% of the candidates failed to score marks. It was confusing to most candidates and that resulted in candidates losing more marks in the follow up question 3.1.2.</li> </ul>
<ul style="list-style-type: none"> <li>• Candidates failed to follow instructions e.g. number 3 says they must “start a question on a new page”.</li> <li>• Number 4 says “number the answers correctly according to the numbering system used in this question paper”.</li> <li>• Number 6 says “show ALL calculations, including formulae where applicable.</li> <li>• There was a great improvement in following the instructions of answering question1.2. however, 8 % of the candidates wrote A instead of A only.</li> </ul>
<ul style="list-style-type: none"> <li>• Language is still a barrier to some candidates as a result they interpret questions incorrectly as understanding depends on language.</li> </ul>
<ul style="list-style-type: none"> <li>• Some candidates still use lead pencils and by the time scripts reached the hands of the markers, some responses were already faint.</li> </ul>
<ul style="list-style-type: none"> <li>• Candidates must refrain from guessing e.g. writing two different responses for one question as</li> </ul>

the mark will be allocated to the first response.

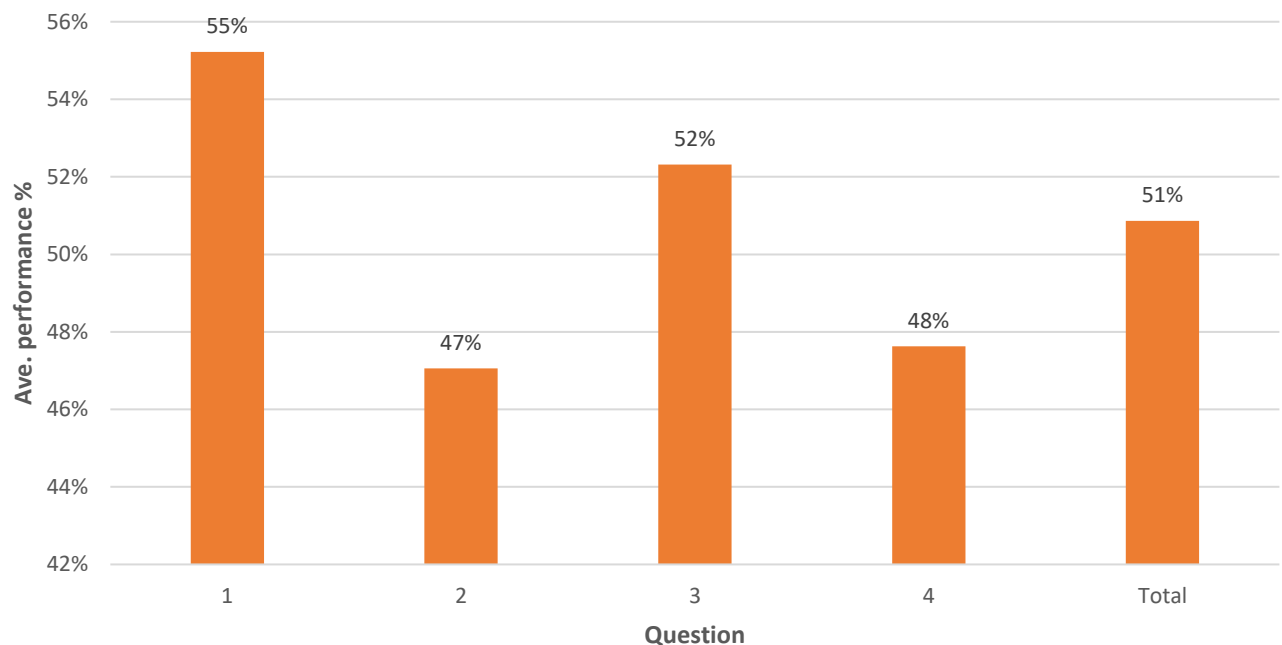
- Allocation of subject in the final time table must not be predictable that both papers will be written at the end of the examinations, as this has a negative impact on the performance of the candidates and their attitude towards the subject.
- It's worse that Agricultural Sciences is a **Science subject** for it to be written in the afternoon and as a last paper of the final examinations. As a result, some learners were not even attending revision classes, some were coming to school under the influence of alcohol due to the paper written as a last paper towards the festive season and initiation school season

The bar graphs below show general overview of learner performance per question as represented in the Rasch analysis (sample of 100 scripts).

**Figure 1: Average performance (%) per question and overall average performance (%)**

<b>Exam</b>	National Senior Certificate 2024
<b>Date</b>	Nov-24
<b>Grade</b>	12
<b>Paper</b>	Agricultural Sciences P1

### Agricultural Sciences P1



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(It is expected that a comment will be provided for each question on a separate sheet).

<b>QUESTION 1 ANIMAL NUTRITION, ANIMAL PRODUCTION &amp; ANIMAL DISEASES, ANIMAL REPRODUCTION (45 MARKS)</b>
<b>(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?</b>
<ul style="list-style-type: none"> <li>• Question 1 was fairly answered with the average mark of 28. Most of candidates were losing marks in questions that were based in animal nutrition and animal reproduction e.g. 1.1.2, 1.1.4, 1.1.9, 1.1.10, 1.2.5, 1.3.3, 1.3.4, 1.4.1, 1.4.3 and 1.4.4.</li> <li>• Even though there were give away question/ easily obtained marks, 43% of candidates failed to provide correct answers more especial the weaker learners even though there were give away questions in question 1.</li> </ul>
<b>(b) Why the question was poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions</b>
<ul style="list-style-type: none"> <li>• It was well answered by candidates, most candidates did well except that in question 1.1.2 candidates seemed not to understand the concept DNNS (DNNS=TDN-DP) and that resulted in candidates responding with value of Nutritive ratio (D) instead of the value of DNNS (C).</li> <li>• 1.1.9 candidates failed to understand the milk pathway from the point of production in the udder until it is released.</li> <li>• 1.1.0 candidates seemed to overlook that the question required that to respond with the statement that is <b>NOT</b> correct when it comes to meiotic division during spermatogenesis.</li> </ul>
<ul style="list-style-type: none"> <li>• 1.2 It was well answered by candidates because about 60 % got 6/10 and above.</li> <li>• 1.2.3 Was tricky to some candidates they wrote A only instead of None. This is due to the fact that some candidates overlooked the key word (correct) in that statement.</li> <li>• 1.2.5 Learners still wrote A ONLY OR B ONLY instead of None due to language barrier. They associated copulation with discharge of semen without understanding the full statement.</li> </ul>
<ul style="list-style-type: none"> <li>• 1.3 It was fairly answered, most of candidates got 6/10 and above.</li> <li>• Candidates scored marks mostly in 1.3.1, 1.3.2 and 1.3.5, even though in 1.3.1 candidates wrote</li> </ul>

villi instead of papillae because both terms are finger-like protrusions but in different areas.

- 1.3.2 Majority of learners scored marks even though 15% of candidates had a problem with spelling errors. some candidates wrote small scale that was not catered for instead of subsistence.
- 1.3.3 Some candidates poorly performed because they did not understand the difference between reproductive and therapeutic cloning. Most candidates wrote reproductive cloning instead of therapeutic.
- 1.3.4 was poorly performed indicating content gap in most candidates. Instead of morula candidates wrote blastocyst instead of morula.

- 1.4 Was fairly answered because most candidates managed to score 3/5 marks However, in question 1.4.1 about 30 of the candidates wrote assimilation instead of absorption.
- 1.4.2 Fairly answered. Even though some candidates wrote bont legged tick, which is not a three host tick and some were simple providing opposites names e.g Red tick. It simply means they were taught that question 1.4 is all about opposites, as it was a general trend on the question.
- 1.4.3 Some candidates wrote chorion or umbilical cord instead of placenta. This shows that some candidates did not understand the collective name of chorion and allantois which is placenta.
- 1.4.4 Was fairly answered. However, some candidates wrote embryo transfer instead of nuclear transfer. This could be a result that some candidates are not used to the synonym of cloning which is nuclear transfer they only term with transfer that they are familiar with is embryo transfer

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

- Subject advisors must facilitate content workshops in each semester which equip educators.
- Educators must drill learners on answering questions based on instructions given e.g when the question says write down only LETTERS, they must do so and not write statements provided.
- Subject advisers must identify lead teachers to go and assist in underperforming schools during the course of the year.
- The subject planner must make sure that there is one or two prescribed textbooks for the subject.
- Educators must drill learners on concepts found in each topic and let term create a word bank for

each topic.

- Educators must expose learners to a variety of questions e.g. combination questions for 1.1, the style of questions set in 1.2, one word questions and replacement questions
- Topic tests must be administered before a new topic is introduced.
- Learners must be encouraged not to leave blank spaces on the multiple-choice questions.
- Educators must use a variety of text books so as to collect as much content as possible
- More informal tasks must be administered as frequently as possible.
- Development of posters and charts must be done that will attract interest of learners.
- Peer teaching must be encouraged to develop confidence of our learners
- Educators must use CAPS document and Examination Guidelines when teaching and assessing formal and informal tasks.

**(C) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.**

- It is evident that most of the aforementioned problems are caused by the fact that, there are educators who speak more and write less when delivering their lessons. Writing more regularly allows the learners to get used to how different words/ concepts are spelt and defined. All these would help in enhancing the performance of our learners in Section A.
- Candidates showed no competence in eliminating the incorrect options in question 1.1, matching the items in column A with the descriptions in column B in question 1.2., giving the correct term in question 1.3 and changing the underlined word in question 1.4
- English must use strictly as a medium of instruction.

## **QUESTION 2: ANIMAL NUTRITION (35 MARKS)**

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

- Question 2 was poorly answered, few candidates managed to obtain marks between 30 and 35. There was no candidate who managed to score 35/35 marks. The average was 12 marks and the lowest mark was 3marks.

- Candidates lost marks almost in calculations that were asked. Candidates failed to interpret the stimulus provided and pick values correctly from the stimulus in almost all the calculation questions. It is evident in their performance that they did not read questions with understanding, did not make use of key words used in questions
- Some candidates still do not understand that when it comes to digestibility co-efficient, they have to deal with dry matter values. Some candidates wrote 30 kg's that is a combination of dry matter and water instead of 25kg.
- Question 2.7 was poorly answered by candidates. Instead of calculating the quantity of feed B some candidates wrote Pearson square re-calculating the parts that were already given in the question paper.

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

- Some candidates managed to score good marks, although analysis and interpretation of stimulus was a challenge more especially for weak learners. This resulted to candidates not to provide correct answers because they failed to understand the stimulus and ended up picking the wrong values especially for calculations.



2.1	<ul style="list-style-type: none"><li>• 2.1.1 Was well answered by candidates, about 80 % of candidates managed to score 4/5 marks.</li><li>• Question 2.1.2 was fairly answered as 55% of the candidates managed to score one mark out of two marks. This indicates that some learners do not know the functions of the bile even though they were able to identify it in question 2.1.1.</li><li>• However, in 2.1.3 some candidates did not know the glands located in the small intestine. Some candidates were simple writing any gland that they know for example they wrote Islets of Langerhans and Cowper's gland of which Cowper's gland belong to question 4 (animal reproduction) not in question 2 (animal nutrition).</li></ul>
2.2	<ul style="list-style-type: none"><li>• 2.2.1 was poorly answered as most candidates failed to give correct responses. Instead of writing the requirements for micro-organisms they siple wrote the functions of micro-organisms.</li><li>• 2.2.2 fairly answered, about 58 % managed to score one mark although some candidates were too general e.g. they simple wrote breaking down of food instead of digestion of cellulose. Some wrote synthesis of protein instead of hydrolysis of protein.</li><li>• 2.2.3 this was a give-away, but it was poorly answered by most candidates because the language barrier, they did not understand the key word in the question that required them to write the name of the micro-organisms that forms the <b>least</b> in terms of the population in the rumen. Instead of fungi /virus candidates wrote bacteria/ protozoa.</li></ul>





2.3	<ul style="list-style-type: none"><li>• 2.3.1 was fairly answered. However, some candidates know the types food absorption but they were twisting the responses for question 2.3.1 (a) and (b). as a results candidates were either scoring 2 marks or zero mark.</li><li>• 2.3.2 was fairly answered by most candidates. Although 35% wrote A instead of B.</li><li>• 2.3.3 about 72% managed to one mark out of two marks. This is due to the fact that some learners were writing one key point of the definition of active absorption instead of two key points of the definition. For example, they simple wrote movement from low to high/ against the concentration gradient in the same sentence, even the bright candidates failed to include that active absorption requires energy which was already a clue for them from the question paper.</li></ul>
2.4	<ul style="list-style-type: none"><li>• 2.4.1 was well answered as about 80% of the candidates managed to score two marks out of two marks.</li><li>• 2.4.2 well answered, even the weaker learners managed to score a mark.</li><li>• 2.4.3 was poorly answered. Most of the candidates were writing cattle or young ruminant instead of fowl/pig. They just overlooked the percentage of crude fibre content in feed A.</li><li>• 2.4.4 Was fairly answered as some of the candidates managed to score one mark out of two marks. Question 2.4.4 (b) was a great challenge to our candidates. They simple wrote B instead of A because they associated butter fat production with milk production.</li></ul>



2.5	<ul style="list-style-type: none"><li>• 2.5.1 Was well answered, although 25% of candidate wrote inorganic instead organic. This was due incorrect interpretation of the schematic representation by some candidates.</li><li>• 2.5.2 Was fairly answered. However, some candidates wrote water instead of putting the value of water which was 5kg. This due to the fact that candidates are not used to a questions that combine two subtopics for example question 2.5.2 was a combination of <b>components of feed</b> and <b>digestibility coefficient</b>.</li><li>• 2.5.3 Was fairly answered. Even weaker candidates managed to get two out of four marks for the formula and the units which is a good improvement. Some candidates simple wrote 30kg instead of 25kg as dry matter intake due to the fact that they were not familiar with this calculation asked in the form of schematic representation. At least few learners wrote incorrect formula by multiplying by 100%, some putting kg's as units and omitting DC= in the formula. There was an evidence that some learners enter the exam room without calculators as some responses did not have final answers.</li></ul>
2.6	<ul style="list-style-type: none"><li>• 2.6.1 was poorly answered due to the fact that the marking guidelines did not cater for a second alternative to the definition of digestible energy although the second alternative (measure of the amount of feed that is digested and absorbed and not excreted) is found on one of the prescribed textbooks that candidates use.</li><li>• 2.6.2 was well answered as it was a give-away question even the weaker learners managed to score a mark.</li><li>• 2.6.3 was well answered as 85 % of the candidates managed to score a mark.</li><li>• 2.6.4 at least 65% of the candidates managed to score two marks out of two marks. However, some candidates were making errors such as adding all the values to the value of gross energy instead of subtracting the values from gross energy. Secondly, they were also not subtracting the value of gases and urine (4MJ).</li></ul>



2.7	<ul style="list-style-type: none"><li>• 2.7 was poorly answered by candidates. Instead of calculating the quantity of feed B some candidates wrote Pearson square re-calculating the parts that were already given in the question paper. Few candidates were calculating nutritive ratio and the percentage of feed B instead on the quantity in kg's of feed B.</li></ul>
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<b>c) Provide suggestions for improvement in relation to Teaching and Learning</b>	
	<ul style="list-style-type: none"><li>• Instruction verbs should be unpacked to learners and must form part of informal assessment during the development of learners for examination readiness.</li></ul>
	<ul style="list-style-type: none"><li>• Candidates must be trained on how to respond to stimulus based questions. More informal and formal tasks must be provided to learners.</li></ul>
	<ul style="list-style-type: none"><li>• Educators must train learners on how to calculate all the steps involved in the Pearson square calculations for example how to calculate the parts, the percentage and the amount or quantity feed in a mixed bag. Educators must also emphasise to learners the part that will be a protein rich concentrate and the part that will be a carbohydrate rich concentrate.</li></ul>
	<ul style="list-style-type: none"><li>• Educators must put more emphasis to learners that they must not put 100% when they write the formula for digestibility coefficient. Secondly educators must refrain from teaching learners to abbreviate formulas because there are still learners who use abbreviations when they write formula. Educators must also emphasize to learners the importance of writing the full correct formula and correct units.</li></ul>
	<ul style="list-style-type: none"><li>• Educators must emphasize the importance of following instruction number 6 of the question paper i.e. show ALL calculations, including formula.</li></ul>
	<ul style="list-style-type: none"><li>• Educators must prepare learners for all types of calculations in the subject.</li></ul>

<b>d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.</b>	
	<ul style="list-style-type: none"><li>• Learners must be exposed to a lot of data response questions e.g scenario, interpretation of graphs, information on the tables etc, must also avoid cut and paste from the previous question papers.</li></ul>
	<ul style="list-style-type: none"><li>• Learners must be exposed to a variety of questions on different calculations.</li></ul>

- Learners must be exposed to live specimens of the parts of alimentary canal in order for them to know the sizes and the positions of the complex stomach and their functions.

### **QUESTION 3: ANIMAL PRODUCTION AND ANIMAL DISEASES (35 MARKS)**

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

- Question 3 It was well answered; this had contributed greatly to the good performance of most learners. The highest score obtained was 34 and the lowest was 03 out of 35 marks. Majority of learners managed to score more than 20 out of 35 marks.
- Majority of the candidates lost marks because the picture in question 3.1 was not clear and it caused a great confusion to the candidates. Some candidates lost some marks because they failed to follow instructions in 3.3 i.e. writing only the letters A-E not the statements.
- Educators must train learners on how to apply their knowledge or information on data-based questions and they must also emphasize that it's not always the case that the answer will be in data provided.
- Pictures, diagrams etc. should be friendly to the learners. Preferably those should be taken from our textbooks or any other source accessible to learners. At least it should not be confusing or deceiving candidates, but should be clear.
- Educators must always write on the board when they deliver lesson and have having spelling test, so that candidates can be able to write the correct spelling of the subject terminology to prevent candidates losing marks because of spelling errors.
- Educators must always stick to the language of teaching and learning and must let their learners express themselves using the language, because in this question learners that were able to express themselves well scored a lot of marks. The use of vernacular (ISIXHOSA) must be discouraged (NB THE XHOSA VERSION of the subject is not assisting in anyway instead it leads to candidates using some Xhosa words).

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

	<ul style="list-style-type: none"> <li>• Candidates managed to score good marks, language and spelling is still a challenge for learners who did not do well in this question. This resulted to candidates not to provide correct answers because they failed to understand the questions. Language and analysis of the diagrams and pictures seemed to create a big problem for the candidates.</li> </ul>
3.1	<ul style="list-style-type: none"> <li>• Was poorly answered about 90% of candidates did not manage to score marks due to the fact that the picture provided in question 3.1 is not clear enough for candidates to be able to tell that it was intensive production system. The stimulus was a misconception because there was no milking parlour, no name on the tank provided (silo), no pens visible guiding the animals to the milking parlour.</li> <li>• Secondly the picture was showing few animals on a larger area even though the marking guideline in question 3.1.2 justification for intensive was many animals on a small area which is incorrect when you look at the picture provided in question 3.1.</li> <li>• The picture in 3.1 was deceiving to most candidates because the structures provided can be seen in other industries beside the type of animal visible.</li> </ul>
3.2	<ul style="list-style-type: none"> <li>• Was well answered, most candidates managed to score all the marks. However, some candidates lost a mark in question 3.2.2, because they wrote examples of used for bedding material e.g. sawdust/straw/wood shavings instead the term bedding.</li> </ul>
3.3	<ul style="list-style-type: none"> <li>• Was well answered as it was a give-away question even weaker candidates managed to score two marks out of three marks.</li> <li>• In question 3.3.2 candidates wrote E instead of D, this shows that candidates do not know the tools that are used in subsistence and commercial farming system.</li> <li>• Few learners failed to follow the instruction of the question which is writing only the letters for question 3.3 they simple wrote the statements from the question paper and ended up losing the whole three marks even though the sequence of the statements was correct.</li> </ul>

3.4	<ul style="list-style-type: none"> <li>It was well answered, more than 78 % of candidates got full marks. However some candidates lost some marks because they only wrote one unit or omitting the units, plotting single bars instead of combined bars, incorrect calibration, incorrect heading with missing variables and including number of breath per minute that was not required.</li> </ul>
3.5	<ul style="list-style-type: none"> <li>Was fairly answered, some candidates managed to score one out of two marks. But majority of the candidates wrote the tools used to administer medication instead of methods used to administer medication. For example, candidates wrote dosing gun instead of dosing.</li> </ul>
3.6	<ul style="list-style-type: none"> <li>It was fairly answered; most candidates were able to score three out of five marks. They were losing a mark in question 3.6 (B) instead of swine flu they wrote Rift valley fever. Rift valley fever was ruled out as a correct answer because of the symptom provided (blotchy lesions).</li> </ul>
3.7	<ul style="list-style-type: none"> <li>Performance was fair. although some candidates were not scoring marks in question 3.7.3 instead of classifying the parasite according to life cycle they simple classified it according to the type of parasite.</li> <li>In question 3.7.4 candidates wrote economic implications of parasite infestation instead of costs associated with the control of parasites.</li> </ul>
3.8	<ul style="list-style-type: none"> <li>It was fairly answered, as 58% of the candidates managed to score 3 marks out of six marks, even though some candidates lost marks because they just wrote the symptoms that are already in the question paper for example mange and scab for question 3.8.2.</li> <li>In question 3.8.3 candidates wrote the preventative measures for ticks not for blowfly for instance candidate wrote rotational grazing, dipping, veld burning instead of crutching/ tail docking/ hygiene. Some candidates lost a mark in question 3.8.3 because of incorrect spelling of <b>crutching</b>, candidates wrote <b>crouching</b> that has a different meaning.</li> </ul>
3.9	<ul style="list-style-type: none"> <li>Was fairly answered, however, some candidate wrote parasite A or parasite B for question 3.9.1 and 3.9.2 instead of writing the types of parasites required by the statements in question 3.9.1 and 3.9.2 due to language barrier.</li> </ul>

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

- Regular informal assessment after teaching each sub topic.
- More informal assessment must be given to learners that emphasis the difference between classifying the types of parasites and classifying parasites according to life cycle.
- More emphasis must be given to learners on two different types of production systems as well as examples of production systems.
- Emphasis must be made on the key symptoms of animal diseases.
- The use of pictures, diagrams, videos etc. is very important to arouse the interest of the learners.
- The frequent use of data response questions is always very important.
- It is also important for educators to put an emphasis that, marks are lost when a candidate provides a description in place of a concept as per the instruction.

**d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.**

- Different pictures or data must be used regularly.
  - Animal diseases should be taught in a table form as presented in the CAPS document (page 46) and examination guidelines (page 14) in order to expose learners to the holistic approach of all the important diseases found in South Africa as prescribed for Grade 12.
  - Different pictures or data must be used to exposed the learners to different production systems, examples of production systems and farming systems.
  - Group teaching must be encouraged in different districts and visits to centres where learners will be exposed to different facilities used in animal production.
- Educators are encouraged to use different textbooks and study guides when preparing their lesson to gather more information.



It is evident that question papers in agricultural sciences are always new, there is no repetition of previous question papers. Educators are encouraged to do revision thoroughly to expose learners to all the types of questions expected.



#### QUESTION 4: ANIMAL REPRODUCTION (35 MARKS)

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

- Question 4 was fairly answered, at least more than 67% of candidates managed to score 18 out of 35 marks. The highest score obtained by the candidates was 35 out of 35 marks and the lowest was 05.
- Question 4 was all about analysis and that disadvantaged learners who are not analytical. This question was bias as it required a lot of interpretation from the stimulus. Candidates with poor eyesight were disadvantaged by having to analyse many diagrams in this question.
- Pictures, diagrams etc. should be friendly to the learners. Preferably those should be taken from our textbooks or any other source accessible to learners. At least it should not be confusing, but should be clear.
- Even the weaker learners managed to get at least 9 out of 35 marks. It evident that candidates were able make use of the advantage of doing related subjects like Agricultural sciences and Life sciences. It very important to encourage cooperation between educators within the school who do related subjects.

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

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| 4.1 | <ul style="list-style-type: none"> <li>• Performance was good, as it was a give-away question, because most candidates managed to score 5 out of 8 marks.</li> <li>• However, in question 4.1.3 some candidates wrote primary reproductive organ which ovary instead of secondary female reproductive organ i.e. fallopian tubes /uterus/infundibulum.</li> <li>• In question 4.1.4. some candidates were describing the processes labelled 1 and 2 instead of providing the name of the process taking place.</li> </ul> |
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4.2	<ul style="list-style-type: none"> <li>• Was poorly answered, as it was evident that even stronger candidates could not score full marks.</li> <li>• In question 4.2.1 candidates lost a mark unnecessary because they wrote synchronisation only (of which synchronisation is a general term) instead of synchronisation of oestrus.</li> <li>• In question 4.2.2 candidates misunderstood the question and ended up writing methods used to identify cows on heat instead of methods used to do oestrus synchronisation.</li> <li>• In question 4.2.3 candidates were misled by the term sterility, they ended up writing cryptorchidism/ hypoplasia instead of the factors that because infertility associated with the statements in question 4.3.2 (a) and (b). some candidates wrote lack of libido/impotence instead of malnutrition and immaturity.</li> </ul>
4.3	<ul style="list-style-type: none"> <li>• Was fairly answered, but in question 4.3.1 some candidates wrote oestrus instead of oestrus cycle. This indicates that candidates do not know the difference between oestrus cycle which is process and oestrus which is one of the stages in the oestrus cycle.</li> <li>• In question 4.3.2 was poorly answered by candidates because they thought that the stages are arranged from the first to the last stage of the oestrus cycle. This indicates that candidates did not read with understanding what was provided.</li> </ul>
4.4	<ul style="list-style-type: none"> <li>• It was well answered, most candidates scored marks, even the weaker learners scored 3 mark out of 5 marks. However, question 4.4.2 was a challenge to most candidates as candidates wrote semen collection/ electrical ejaculator instead of artificial vagina.</li> </ul>
4.5	<ul style="list-style-type: none"> <li>• It was poorly answered, because most candidates wrote cloning definition instead of embryo transfer definition. This could be because they failed to analyse the picture provided in question 4.5 since the cows shown in the picture look identical.</li> <li>• In question 4.5.3 some candidates lost a mark because they failed to provide the key importance of the donner cow which provision of <b>superior</b> embryos they simple wrote provision of embryos.</li> </ul>
4.6	<ul style="list-style-type: none"> <li>• Was not well answered by most candidates as they only managed to score at least 1 mark out of 4 marks. Instead of stating with D, B, C, A most candidates were stating B,D,C,A or</li> </ul>

	B,C,D,A. some candidates still did not follow the instructions of the question i.e. writing only the letters, they were writing the statements.
4.7	<ul style="list-style-type: none"> <li>• Was poorly answered by most candidates. In 4.7.1 the key word was the action done by the milker but candidates wrote sight of the calf/sound of the milking machine.</li> <li>• In question 4.7.2 candidates seemed to be clueless about how oxytocin stimulates the milk let down process they are only familiar with the function that oxytocin stimulates milk release.</li> <li>• In question 4.7.4 most candidates wrote antibiotics instead of antibodies it is clear that candidates associated antibiotics with immunity against diseases since antibiotics are used to treat diseases however, colostrum does not have antibiotics but antibodies.</li> </ul>

<b>c) Provide suggestions for improvement in relation to Teaching and Learning</b>	
	<ul style="list-style-type: none"> <li>• Educators must put more emphasis on the functions and differences of hormones involved in lactation and how the hormones work to stimulate milk production and milk let-down processes.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educators are encouraged to integrate the related topics( oestrus synchronisation, AI, ET,NT) in animal reproduction and emphasise differences and similarities between them to avoid misconceptions to candidates.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educators must emphasis the different types of cloning, their purpose as well as advantages and disadvantages of cloning. It showed to be a problematic question to candidates especially in question 1.</li> </ul>
	<ul style="list-style-type: none"> <li>• Pictures, videos and charts must be used for teaching topics with diagrams because question 4 always have diagrams and pictures that need to be analyzed and interpreted. So, candidates need more exposure in order for them to score marks.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educators must create more data response questions.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educators must be encouraged to interact with the Chief marker's report so as to avoid repeating the same mistakes. Subject advisors must organize information sharing workshops so as to discuss challenges faced during marking.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educators should be encouraged to use question by question approach when revising.</li> </ul>
	<ul style="list-style-type: none"> <li>• Educator must formulate groups of learners in order to facilitate peer teaching.</li> </ul>

- Educators are also encouraged to formulate groups according to their level of knowledge.
- Subject advisers are encouraged to conduct workshops where they will be unpacking exam guidelines, ATP and CAPS document.

**d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.**

- Candidates still struggle to respond to data-based questions this means therefore educators must expose them to more data-based questions, let them interact with the data even before we give them questions.
- Candidate still lose marks on labelling of diagrams this means therefore learners must be assessed more on labelling of diagrams, because we cannot run away from the fact that all our papers have got diagrams to label.
- Functions of hormones are still problematic therefore we recommend that hormones must be dealt with intensively.
- More emphasis must be done with the importance of donor and recipient cows.