Province of the EASTERN CAPE EDUCATION

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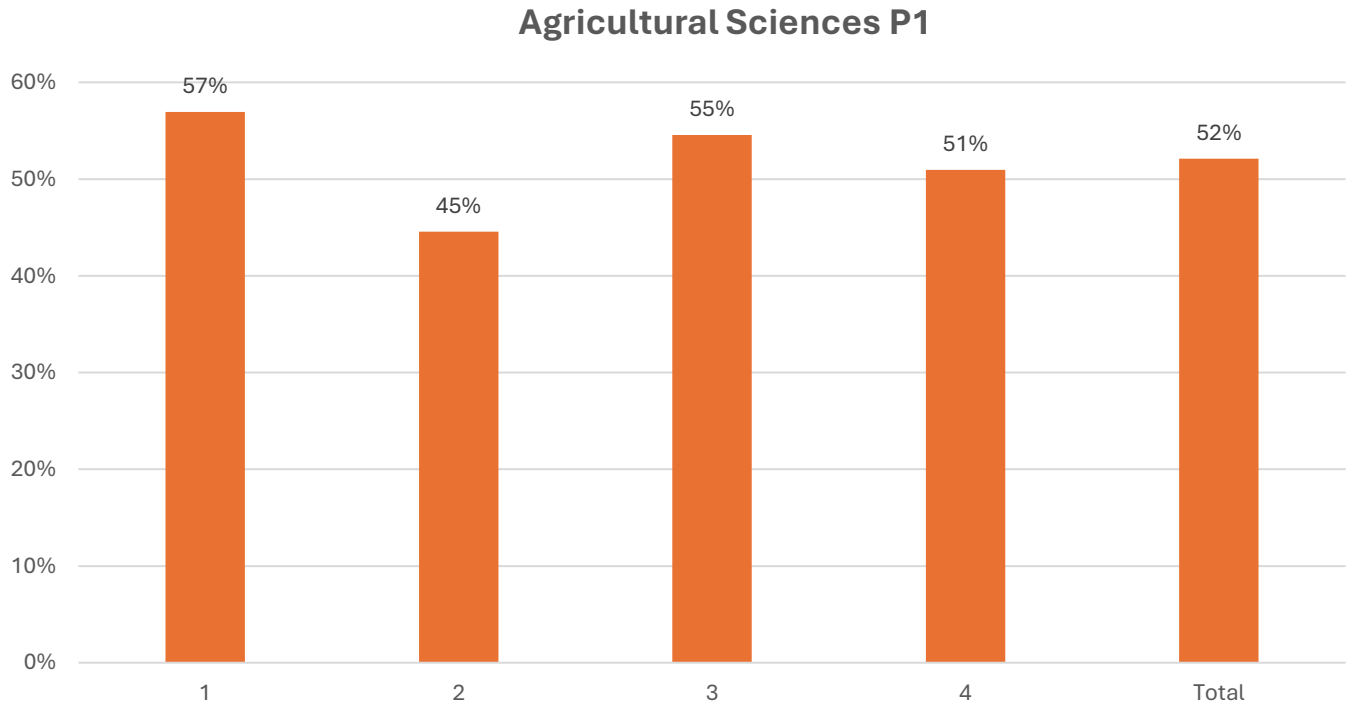
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

2025 NSC CHIEF MARKER'S REPORT

SUBJECT	**AGRICULTURAL SCIENCES**		
QUESTION PAPER	1		
DURATION OF QUESTION PAPER	**2½ HOURS**		
PROVINCE	**EASTERN CAPE**		
NAME OF THE INTERNAL MODERATOR	**MASHIQA MZOXOLO**		
NAME OF THE CHIEF MARKER	**VIKA LUSANDA**		
DATES OF MARKING	**28 NOVEMBER – 13 DECEMBER 2025**		
HEAD OF EXAMINATION:	**MR EM MABONA**		

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

Question	Topic	Average mark	Ave. performance %
1	Short Questions	26	57%
2	Animal Nutrition	16	45%
3	Animal Production, Protection and Control	19	55%
4	Animal Reproduction	18	51%
Total		**79**	**52%**



1. Section A – Short Questions, Average Mark: 26, Ave &: 57% (highest-performing section)
Candidates performed relatively well in this section, indicating a good grasp of basic concepts and recall-type questions. This suggests that foundational knowledge is strong.
2. Animal Nutrition - Average Mark: 16, Ave %: 45% (lowest-performing section)
This section was clearly the most challenging. Candidates struggled with calculations (e.g., nutritive ratio), interpreting feed composition, and applying formulas. Conceptual and numerical application gaps are evident.
3. Animal Production, Protection and Control - Average Mark: 19, Ave % 55%
Performance here was moderate. Candidates understood general production practices, but errors occurred in more detailed content areas such as pest/disease control measures and management techniques.
4. Animal Reproduction, Average Mark: 18, Ave %: 51%
Slightly above the overall average. Candidates handled definitions and diagrams well but struggled with interpreting reproductive cycles, processes, and application-type questions

Overall, learner performance in the question paper showed mixed levels of competency, with noticeable variation across different cognitive levels and content areas. While some questions were handled well, particularly those requiring basic recall and straightforward application of knowledge, several challenges emerged in questions requiring deeper understanding, interpretation of data, and multi-step reasoning.
Strengths observed:

- Candidates generally performed better in lower-order questions , especially those requiring definitions, listing, or identification of agricultural concepts.
- Questions assessing routine calculations or familiar diagrams were answered adequately by the majority of candidates.
- In sections aligned closely with classroom examples or past papers, performance was relatively strong, suggesting good coverage of frequently tested concepts.

Areas of concern:

- Performance declined noticeably in higher-order questions (LO3), especially those requiring interpretation, analysis, or justification.
- Many candidates struggled with questions requiring application of principles to new scenarios, indicating gaps in conceptual understanding.
- Misinterpretation of questions was common, suggesting that reading comprehension and examination technique need strengthening.
- Some candidates lacked adequate content knowledge in specialised topics, leading to incomplete or inaccurate responses.
- Where multi-step calculations were required, errors often occurred due to incorrect formulas, poor working steps, or omission of units.

General patterns observed:

- A significant number of candidates demonstrated surface-level learning, relying on rote memorisation rather than conceptual understanding.
- Answers were sometimes too brief, lacking depth or key terminology required for full marks.
- In questions involving diagrams, flow charts, or case studies, candidates often failed to link the visual information to agricultural principles.
- Spelling errors and poor presentation affected the clarity of some responses, though this did not generally impact marks severely unless terminology was distorted.

Conclusion:

While the paper was within the expected standard and covered the curriculum appropriately, overall learner performance suggests that more emphasis is needed on conceptual mastery, analytical thinking, problem-solving, and examination technique. With targeted teaching support and reinforcement of key concepts, learner performance can improve significantly in future assessments.

When compared with the previous year's 7-point scale results, learner performance in 2025 (82%) was lower than in 2024 (86.8%), reflecting a decline of almost 5%.

Levels	Percent 2024	Percent 2025
1	13,2	18.8
2	19,1	20,5
3	22,6	20.8
4	20,5	18,6
5	14,4	12,7
6	7,5	6,8
7	2,6	2,7
Overall % Pass	86,8	82,1

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

1.General comment on the performance of candidates in question 1. Was the question well answered or poorly answered?

Overall, Question 1 was moderately well answered, with several sub-questions showing improved performance compared to previous years. Many candidates demonstrated good recall of basic knowledge, especially in the multiple-choice and matching items. However, there were also clear indications of conceptual misunderstanding, weak language proficiency, and poor exam-writing skills.

Questions 1.3 and 1.4 remain the most poorly answered sections of Question 1.
The errors demonstrate not only content gaps, but also:

- difficulties in understanding subject-specific terminology,
- reliance on memorised examples instead of definitions,
- and language barriers affecting interpretation.

Although not poorly answered overall, Question 1 revealed clear gaps in conceptual clarity and terminology, indicating the need for stronger emphasis on scientific vocabulary, understanding of processes, and precise use of agricultural science concepts.

2.Provide suggestions for improvement in relation to Teaching and Learning.

1. Educators should incorporate daily vocabulary routines focusing on spelling, meaning, pronunciation, and application of agricultural terms.
Use strategies such as word walls, and terminology flashcards, concept booklets
2.Emphasis should be placed on distinguishing:

- cellulase vs cellulose
- corpus luteum vs corpus callosum
- complete/ideal protein vs egg protein
- internal vs external parasites
- feed components (protein-rich vs carbohydrate-rich)

2.Bring actual feed samples to class (e.g., maize, lucerne, soya bean) to teach feed classification.
3.Use charts and pictures.to demonstrate disease and parasite prevention methods
4.educators should verify that candidates understand the concept, not just the translation.
5.Ensure marking consistency and early identification of common learner errors.
6.Use learner scripts in teacher clusters to identify trends and adjust teaching accordingly.
7.More informal tasks must be administered as frequently as possible.
8.Development of posters and charts must be done that will attract interest of candidates.
9.Peer teaching must be encouraged to develop confidence of our candidates
10Educators must use CAPS document and Examination Guidelines when teaching and assessing formal and informal tasks.

4.Describe any other specific observations relating to responses of candidates and comments that are useful to teachers, subject advisors, teacher development etc.

1.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 candidates to get used to how different words/ concepts are spelt and defined. All these would help in enhancing the performance of our candidates in Section A.
2.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
3.English must use strictly as a medium of instruction.
4.The confusion between urea and urine also indicates that some candidates may struggle to distinguish between scientific terms as they are pronounced in class. This highlights the need for teachers to place stronger emphasis on accurate terminology, including spelling, meaning, and context of use.
A similar misunderstanding was observed with the Pearson Square method, which some candidates incorrectly referred to as the "Person Square method", demonstrating again that phonetic similarity can easily mislead candidates who rely on sound rather than conceptual understanding.

QUESTION 2

1.General comment on the performance of candidates in question 2. Was the question well answered or poorly answered?

Question 2 was poorly answered overall, with the majority of candidates struggling significantly across almost all sub-questions. Very few candidates achieved marks between 20 and 35, and no candidate obtained full marks (35/35). The average performance was 12 marks, with several candidates scoring as low as 0/35, indicating a widespread lack of mastery of the concepts assessed.
A key concern was that candidates lost marks in nearly all calculation-based items. Many were unable to correctly interpret the stimulus material, extract relevant values, or apply appropriate formulas. This suggests that candidates did not read the questions with understanding and often ignored key words that guided the method of calculation.
A recurring problem was the misunderstanding of digestibility calculations. Many candidates still do not recognise that digestibility calculations must first consider dry matter (DM). Instead of following the required steps, they calculated the digestibility coefficient when they were explicitly asked to calculate dry matter absorbed. This reflects that the calculation type was unfamiliar to most candidates, including some of the top-performing candidates.
Overall, the performance in Question 2 highlights critical gaps in interpretation of stimulus data, application of formulas, multi-step quantitative reasoning, and conceptual understanding of digestibility and energy calculations.

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

2.1 **Alimentary Canal (Pig)**

2.1.1 Most candidates performed well, with only a small number still classifying the animal as "non-ruminant" instead of naming it correctly as a *pig*.

2.1.2 More than 30% of candidates failed to associate the presence of salivary amylase with the pig, indicating a conceptual gap about species-specific digestive enzymes. Candidates failed to read and interpret the stimulus carefully and make coorect deductions..

2.1.3 Candidates generally performed well in identifying the parts involved in ingestion, with very few showing uncertainty.

2.1.4 Only a small proportion could not identify the oesophagus (Part A) on the flow chart.

2.1.5 A significant weakness was observed regarding the function of hydrochloric acid, approximately 70% of candidate slacked understanding of its role in protein digestion and the activation of enzymes.

2.2 **Accessory Glands**

2.2.1 About 75% of candidates correctly identified the pancreas, showing good recognition of digestive structures.

2.2.2 However, nearly 80% failed to name a single pancreatic enzyme. Many incorrectly wrote *pancreatic juice*, demonstrating difficulty distinguishing between digestive secretions and specific enzymes such as amylase, lipase, and trypsin.

2.2.3 Roughly 68% correctly stated the functions of the liver, showing fair understanding of this organ.

2.2.4 More than 60% were unable to explain the importance of emulsification. Many simply defined the term or stated "improves absorption," failing to mention the critical function of breaking down fat globules into smaller droplets is to increase the surface area for the enzyme lipase.

2.3 **Components of a Feed**

2.3.1 A large majority incorrectly identified calcium instead of sodium as the mineral controlling the intake of a stock lick. Some even listed protein, indicating confusion between organic nutrients and minerals.

2.3.2 More than 75% correctly gave two functions of protein, reflecting solid foundational knowledge.

2.3.3 More than half could correctly identify other organic components of feed. However, some candidates incorrectly considered water to be an organic component.

2.3.4 Although candidates often identified calcium as the mineral preventing osteomalacia, many failed to provide the second mark by linking it to strong bone formation.

2.4 **Digestibility of Feed**

2.4.1 Approximately 80% of candidates struggled with the calculation. The question was pitched differently from the traditional format, which likely caused confusion despite it assessing the same concept. Calculating dry matter absorbed was a step unfamiliar to many candidates. This resulted in candidates performing the wrong calculations or using wrong values. Some also wrote 15 kg (as-fed) instead of 12.5 kg dry matter.

2.4.2 This question required identifying an animal factor affecting digestibility, not a plant factor. Many candidates listed plant factors and lost the mark. Only 40% responded correctly. This shows weak data interpretation skills

2.5 **Nutritive Ratio (NR)**

2.5.1 Despite this being considered a low-level question, more than half of the candidates were confused by the instruction to use the DNNS formula rather than the traditional (TDN – DP) / DP formula.

Those who used the traditional formula—even if producing the correct answer—lost 2 out of 3 marks due to ignoring instructions. This shows poor attention to detail

2.5.2 Because many candidates still managed to calculate the correct NR, they were able to correctly state that a feed with an NR of 1:5 is suitable for growth, production, and reproduction.

2.5.3 To adequately support their response in Q2.5.2, candidates were expected to specify that the feed had a narrow nutritive ratio. Responses that merely stated "narrow" without linking it to NR were insufficient.

2.6 **Types of Feed**

2.6.1 More than 57% of candidates demonstrated understanding of the two main types of feed, showing a reasonable grasp of roughage versus concentrate classification. Most candidates scored 1 out of 2 marks, correctly identifying A as roughage. However, the majority failed to identify C as dry roughage.

2.6.2 Candidates gave the function of roughage in adult ruminants (e.g., reducing bloat, stimulating rumination, assisting digestion).

Many overlooked the keyword "young", showing poor question interpretation.

Candidates are not distinguishing between nutritional needs of young vs adult ruminants.

Some responses reflected content confusion, giving the functions of proteins (e.g., "growth"), which is unrelated to the question.

2.6.3 Although the question was a "give-away," many candidates failed to recall examples of common feed examples such carbohydrate rich concentrates and protein rich roughages.

2.7 **Energy values**

Q 2.7.1 was especially poorly answered. Even stronger candidates were unable to correctly carry out calculations that required the integration of percentages and kilograms within the same energy calculation. Many did not convert correctly or did not know which values to use. This confirms that candidates are not yet comfortable with multi-step, mixed-unit calculations, and lack the necessary flexibility in applying nutritional formulae.

Candidates strugglied with basic mathematical operations in agricultural contexts.

3.Provide suggestions for improvement in relation to Teaching and Learning.

Educators should integrate stimulus-based questions into every assessment.

They must train candidates to highlight key words and circle values from the stimulus before attempting any calculation.

Educators must:

Train their candidates to understand and to use both formulae for calculating the nutritive ratio.

Provide scaffolded examples showing each step with explanations.

Encourage candidates to write formulas before substituting values.

Use classroom demonstrations with actual feed samples to show moisture vs dry matter.

Teach NR using visuals (e.g., balancing protein vs energy blocks).

Use labelled diagrams and physical feed samples in class.

Teach candidates to structure calculations clearly (Formula → Substitution → Answer).

Use labelled diagrams and flow charts showing where each gland acts and what it secretes.

4.Describe any other specific observations relating to responses of candidates and comments that are useful to teachers, subject advisors, teacher development etc.

Many mistakes show that candidates attempt calculations without understanding the underlying theory.

Some candidates jump straight to answers or skip steps

Candidates struggled to extract correct values from tables, graphs, and written statements.

Candidates were unsure about components of feeds (carbohydrates, proteins, fats, vitamins, minerals, water)

Many errors resulted from misunderstanding command words/instructional verbs and scientific terms.

Some errors show that certain complex calculations and contexts may not be consistently taught.

Limited exposure to visual or practical examples of feed categories and insufficient mastery of terminology beyond basic classifications of feeds.

QUESTION 3

1.General comment on the performance of candidates in Question 3. Was the question well answered or poorly answered?

Question 3 was fairly answered, with the majority of candidates achieving 50% and above. This improvement can be attributed to the fact that most items were direct, specific, and supported by visual stimuli, which made the questions more accessible to candidates. Candidates performed particularly well in sub-questions where pictures were provided (Questions 3.1, 3.2, 3.3, and 3.6), as well as in items supported by a word box (Questions 3.4 and 3.8). This demonstrates that candidates engage more effectively with data-based and visual questions and tend to respond better when they can associate abstract content with concrete illustrations.

Overall, many candidates managed to score around 15 out of 35 marks, showing a slight improvement compared to the previous year.
However, approximately 30% of candidates lost marks unnecessarily due to misinterpreting the questions or failing to follow instructions. This highlights the ongoing issue of reading for comprehension.
Furthermore, language barriers remained a significant challenge. Many candidates struggled to understand key terminology or phrases within the questions, which affected their ability to provide accurate responses. Spelling errors, especially in scientific terms, also contributed to the loss of marks.

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

Question 3.1 **Farming Systems and Justification**
3.11 The question required the identification of B first, yet most candidates answered A, giving subsistence farming instead of commercial farming.
Many candidates continued to confuse farming systems with production systems. Instead of identifying commercialand subsistence as farming systems, a significant number responded using production system terminology, most commonly writing "intensive" for commercial and "extensive" for subsistence. This indicates a conceptual gap in distinguishing between *scale/management style* (production systems) and *purpose of production* (farming systems).
A recurring spelling error was the writing of "substance" instead of *subsistence*, showing limited vocabulary recognition.
Question 3.1.2
When required to justify their choices of commercial versus subsistence farming, most

candidates again relied on incorrect descriptors such as "large scale" for commercial and "small scale" for subsistence. Although these may loosely relate to the systems, they were not the expected conceptual justifications. Candidates gave reasons for *intensive/extensive systems* (e.g., *more labour*, *controlled environment*) instead of distinguishing between *commercial* (for profit) and *subsistence* (to sustain the family).. Many candidates' justifications did not align with their answers in 3.1.1.

Question 3.2. **Factors Increasing Production**

3.2.1 was fairly answered, but many candidates explained what they saw in the pictures instead of identifying factors that increase production.

- For Picture A, candidates wrote "feedlot" instead of feeding/nutrition.
- For Picture B, candidates wrote birth, lactation or mother feeding calf instead of breeding/reproduction.

3.2.2 About 60% incorrectly wrote 'diseases' as a factor, which was not accepted in the marking guideline.

- Candidates tend to list examples instead of the main factor required.

Question 3.3 **Livestock Handling Facilities**

3.3.1 was well answered, although around 40% confused a holding pen with a holding shed.

3.3.2 Many candidates gave the purpose of a farrowing pen instead of the purpose of bedding (e.g., *separate sow and piglets* instead of *to provide warmth*).

3.3.3 Candidates scored marks but often identified the facility (e.g., "feedlot") rather than explaining its purpose

Question 3.3.2

A significant number of candidates showed limited understanding of the purpose of bedding material. Instead of explaining its role, such as providing comfort, absorbing moisture, maintaining hygiene, or regulating temperature, some candidates either left the question unanswered or gave unrelated responses.

Question 3.3.3

Candidates identified the facility (e.g., "feedlot") rather than explaining its purpose. Others provided general differences between the two facilities shown in Pictures C and D, rather than explaining the differences based on their specific purposes. The question required differentiation aligned with function, such as feeding, watering, reproductive management, confinement, or safety, yet many responses focused on superficial or structural differences. This suggests that candidates may recognise the structures visually but struggle to relate them to their functional design in livestock production systems.

Question 3.4 – **Equipments and tools**

- Generally well answered, but with notable issues:

In 3.4.1, many candidates guessed terms such as *plywood board* instead of plastic shaker, as the term is not found in most textbooks—disadvantaging approximately 75% of candidates.
In 3.4.4, the phrasing misled candidates because it only referenced the *head*, while a casting harness also restrains the *body*.
Some responded with halter, which was not accepted.

Question 3.5 **– Handling sheep**

Well answered, with about 70% scoring a mark.
Some candidates wrote guidelines for transporting animals or reasons for handling (e.g., *castration*, *medication*) instead of the required responses.

Question 3.6. **Parasites**

Overall poorly answered, especially for weaker candidates.
3.6.1 Many wrote incorrect parasites such as *liver fluke* or *roundworm* instead of the correct tapeworm.
3.6.2 Candidates ignored instructions to refer to diagram B and instead described diagram A.
3.6.3 A considerable number of candidates misunderstood how to differentiate parasites based on their life cycles. Instead, candidates incorrectly classified them as internal or external parasites, which was not relevant to the question.
Furthermore, some candidates wrote "3-host" and "4-host" life cycles, confusing *host number* with *stages of development*. This confusion indicates that candidates may memorise isolated terminology without understanding the biological meaning behind life-cycle classification.

Question 3.7 **– Poisonous Plants and Animal Health**

3.7.1 was fairly answered, but most candidates:

- Gave prevention measures instead of treatment after ingestion.
- Confused salt poisoning with plant poisoning.

3.7.2 Many wrote roles of the farmer, not the role of the state, despite clear instructions.

Question 3.8 **Animal diseases**

A significant number of candidates demonstrated confusion between red water and heartwater, despite these diseases having distinct characteristics and being transmitted by different tick species. Indicates weak content mastery of tick-borne diseases.

Question 3.9 **– Methods of Administering Medication**

Well answered, but some candidates listed tools such as *dosing gun* instead of methods such

as *oral*, *injection*, or *topical application*.

3.Provide suggestions for improvement in relation to Teaching and Learning.

- Train candidates to read each question carefully, paying attention to key words such as *first*, *refer to the diagram*, or *purpose*.
- Rotate picture-based activities during lessons to prevent candidates from memorising specific images.
- Educators should expose candidates to varied question styles and use multiple pictures and real-life examples when teaching farming systems.
- The incorrect identification of the holding pen highlights a need for stronger emphasis on livestock handling facilities in teaching and revision.
- Create a two-column exercise:
  Column A – Pictures of facilities (feedlot, holding pen, farrowing pen).
  Column B purposes.Candidates should match the items and justify their choices.
- Use flow diagrams to show: Stage-based life cycles and the number of hosts
- Focused teaching on the differences between major tick-borne diseases is recommended.
- Use inquiry-based revision activities where candidates must determine:
  The problem
  The cause
  The correct agricultural principle to apply

This reinforces the habit of analysing before answering.

- Teachers should bring actual tools, models, or videos when available.
- Use worksheets where candidates must write the function/purpose of each pictured item.
- Teachers should explain complex terms using simple language first, then build to technical terms.
- Group teaching must be encouraged in different districts and visits to centres where candidates will be exposed to different facilities used in animal production.

4.Describe any other specific observations relating to responses of candidates and comments that are useful to teachers, subject advisors, teacher development etc.

The widespread use of scale-based responses rather than purpose-based reasoning reveals that candidates may not fully understand the underlying economic objectives of the two farming systems.

Several errors were caused by misinterpreting pictures (e.g., holding pen vs holding shed, bedding vs farrowing pen)

This suggests that candidates may rely too heavily on stimulus-based contextual cues rather than reading subsequent questions independently and responding to their specific focus.

Many errors resulted from confusing closely related terms. Teachers should design lessons that compare and contrast.
Errors showed candidates did not follow instructions in some questions.
Some errors stemmed from difficulties understanding English phrasing.

QUESTION 4

General comment on the performance of candidates in Question 4. Was the question well answered or poorly answered?

Question 4 was fairly answered, with more than 55% of candidates managing to score at least 15 out of 35 marks. The highest mark obtained was 35/35, while the lowest was 4, showing a wide variation in the level of understanding among candidates.
Candidates who demonstrated strong diagram interpretation skills and who had a solid background in Life Sciences performed noticeably better. Many candidates, particularly those in the science stream, were able to make meaningful connections between Agricultural Sciences and biological concepts, contributing to the overall improvement observed in this question compared to previous years.
However, the question also disadvantaged weaker candidates, especially those who struggle with:

- interpreting and analysing diagrams, graphs, and stimuli,
- understanding scientific terminology related to reproduction,
- reading with comprehension and identifying key requirements of the question.

The question relied heavily on visual stimuli, and candidates with limited exposure to diagrams or those relying only on teachers' notes (due to shortages of LTSM) experienced difficulties.
Candidates with poor eyesight were also placed at a disadvantage because of the number of diagrams.
Despite these challenges, Question 4 shows a slight improvement from previous years, suggesting that candidates are beginning to develop better analytical and reproductive physiology skills.

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

4.1 Congenital Defects

Although Question 4.1 was generally well answered, some candidates did not understand that 4.1.3 required a term, not a description.

Candidates described the congenital defect (e.g., "the calf is born without legs") instead of naming the term congenital defect.

Candidates thought describing the abnormality was equivalent to giving the scientific term.

4.2 Gametogenesis and Cell Division

Many candidates lack foundational knowledge of gamete formation, especially the distinction between mitosis and meiosis.

Candidates simply guessed ("gabbling") and wrote either mitosis or meiosis for both answers regardless of context

4.3 Hormonal Graph Interpretation

Candidates with weak graph-analysis skills and poor understanding of hormone functions were disadvantaged.

Question 4.3.1

A notable number of candidates responded with "day 6" because they misinterpreted the phrase "towards the onset of the second ovulation". Many interpreted "onset" as the end rather than the beginning, leading to incorrect deduction of the day. This indicates that language and comprehension, rather than content knowledge, contributed to the error.

In 4.3.2, candidates failed to interpret the hormonal changes shown on the graph.

They gave irrelevant descriptions instead of linking the graph to reproductive events.

This led directly to errors in 4.3.3, where the follow-up question required correct interpretation from 4.3.2.

Question 4.3.4

The most frequent incorrect answer provided for this question was di-oestrus. This suggests that candidates may memorise oestrous cycle phases without fully understanding their sequence or characteristics.

4.4 Combined Bar graph - Semen Characteristics

Most candidates answered well, but a recurring pattern emerged regarding units of measurement.

Q 4.4.1Several candidates drew the wrong type of graph—histograms or stacked bar charts—instead of the required combined bar graph, resulting in the loss of a mark. In addition, a significant number of candidates omitted units on one or more axes, again losing marks. This reflects ongoing weaknesses in graphing conventions, despite such skills being repeatedly

assessed across grades.

Candidates gave only one unit instead of writing units for both variables.

- *Example:* Writing "billion/ml" only.

Candidates thought stating any unit was sufficient, without fully specifying both components of concentration.

4.5 Oestrus Detection Devices

Candidates described the technique rather than how the device works to detect heat.

Q 4.5.1& 4.5.2

Confusion between tail chalking, heat mount detectors, and chin-ball markers.

- *Example:* Candidates wrote that *tail chalking changes colour or leaves stains*, which is a function of the chin-ball marker.

Believing all devices "change colour" or "leave marks," without understanding the mechanism unique to each tool.

Many candidates were unable to adequately explain how the pedometer or tail-chalking method detects oestrus. Some merely stated where the device or chalk is placed (e.g., "*pedometer is attached to the leg"*), without explaining the mechanism of detection—such as increased activity recorded by the pedometer or removal/smudging of chalk due to mounting behaviour. These answers earned 0/2, demonstrating that candidates often describe procedures rather than explaining functional principles.

4.7 Dizygotic Twins and Reproductive Processes

Even though the question was simple, candidates showed deep misunderstandings of twinning and reproductive terminology.

4.7.1About 45% wrote "Dizygotic twins" instead of explaining how they form.

Others described general fertilisation, rather than the specific process of two ova fertilised by two sperm cells.

4.7.2 Many wrote "conception" or "implantation," which were not accepted in the marking guideline.

This reveals a misunderstanding of the sequence following fertilisation, where the correct processes should relate to early embryonic development rather than implantation

4.8 Reproductive Technologies and Cloning

Candidates overlooked the keyword "type" and answered in broader terms.

4.8.1Many wrote "cloning" instead of naming the specific *type of reproductive technique*.

Candidates assumed the scenario required "cloning" and believed it should be credited.

4.8.3 Candidates could discuss disadvantages of cloning, but were not awarded for identifying "cloning" in 4.8.1.

4.9 Stages of Pregnancy vs Parturition

Candidates confused pregnancy with birthing stages.

4.9.1 Many described parturition stages (e.g., signs of giving birth) instead of the stages of pregnancy.

Misconception: Any image showing a hand in the cow suggested the animal was "giving birth."

4.9.2. Worst performed question.

Candidates listed problems during delivery (e.g., dystocia).

Some listed secondary factors such as mummification or maceration.

The picture misled some candidates into thinking the cow was struggling to calve

Provide suggestions for improvement in relation to Teaching and Learning.

- Re-teach foundational concepts such as gametogenesis, types of cell division, stages of pregnancy, hormonal regulation, and twinning.
- Use flow diagrams, models, animations, and charts to improve visual understanding of meiosis, mitosis, and ovulation processes.
- Provide concept comparison tables (e.g., *pregnancy vs parturition*, *monozygotic vs dizygotic twins*).
- Develop simplified notes with clear definitions, to assist weaker candidates struggling with terminology.
- Teach candidates explicitly how to read graphs: identify axes, trends, peaks, and links to physiological events.
- Provide step-by-step protocols for interpreting reproductive diagrams (e.g., semen structure, hormonal cycles, reproductive organs).
- Schools should invest in visual learning aids (charts, posters, models) or teachers should create low-cost visuals.
- Train candidates to identify command words such as outline, explain, describe, name, type, process.
- Develop a classroom routine where candidates underline key words before attempting any question.
- Conduct mini comprehension tests using Agricultural Sciences language and diagrams.
- Encourage teachers to write difficult terms on the board consistently during lessons.
- Demonstrate the mechanisms of tail chalking, chin-ball markers, and heat mount detectors using drawings, videos or plastic models.
- Teach candidates how each device functions, not just what it is used for.
- Use scenario-based questions frequently to train thinking in context
- Reinforce the importance of writing full units for both variables in graphs

- Provide bridging lessons for candidates without Life Sciences to strengthen biological understanding.

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

Poor performance resulted from:

- Weak foundational knowledge of cell division, gametogenesis, and reproductive processes
- Misinterpretation of diagrams and graphs
- Confusion between similar reproductive terms
- Overlooking keywords in questions
- Misleading visual stimuli in diagrams
- Inability to differentiate between similar processes (pregnancy vs parturition, devices vs techniques, twinning vs fertilisation)