

2012 HSC Notes from the Marking Centre – Agriculture

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Introduction

This document has been produced for the teachers and candidates of the Stage 6 course in Agriculture. It contains comments on candidate responses to the 2012 Higher School Certificate examination, indicating the quality of the responses and highlighting their relative strengths and weaknesses.

This document should be read along with the relevant syllabus, the 2012 Higher School Certificate examination, the marking guidelines and other support documents developed by the Board of Studies to assist in the teaching and learning of Agriculture.

General comments

Teachers and candidates should be aware that examiners may ask questions that address the syllabus outcomes in a manner that requires candidates to respond by integrating their knowledge, understanding and skills developed through studying the course. It is important to understand that the Preliminary course is assumed knowledge for the HSC course.

Candidates need to be aware that the marks allocated to the question and the answer space (where this is provided on the examination paper) are guides to the length of the required response. A longer response will not in itself lead to higher marks. Writing in excess of the space allocated may reduce the time available for answering other questions.

Candidates need to be familiar with the Board's [Glossary of Key Words](#), which contains some terms commonly used in examination questions. However, candidates should also be aware that not all questions will start with or contain one of the key words from the glossary. Questions such as 'how?', 'why?' or 'to what extent?' may be asked, or verbs that are not included in the glossary may be used, such as 'design', 'translate' or 'list'.

Section I

Part B

Question 21

In most responses, candidates identified a use or some features of pastures and linked them in some way to animal production.

In the best responses, candidates described the characteristics of pasture types, how they are used and made a strong link to a specific pasture-based animal production system.

In better responses, candidates demonstrated a strong link between the use of pastures and at least one aspect of animal production in addition to discussing the similarities or differences in use of the pasture types.

In weaker responses, candidates tended to present a list of characteristics of native and introduced pastures with no reference to their use in pasture-based animal production systems.

Question 22

- (a) Most candidates calculated a mean accurately.

In the best responses, candidates calculated a mean and a standard deviation, for either a sample or a population, accurately and reported SD to two decimal places.

- (b) Most candidates outlined a trial related to plants and light and included elements of one or two design components.

In the best responses, candidates outlined a relevant trial and included clear links with all four design components (replication, randomisation, control/treatments and standardisation).

In many weaker responses, candidates described an experiment they had conducted without reference to the question being asked. Some candidates discussed design components but did not apply them to a relevant trial.

Question 23

- (a) In better responses, candidates identified two distinct sources of farm water.

In weaker responses, candidates identified government as a source or only identified one source while often naming various terms such as creek, stream, river, rivulet or brook to indicate the same water source.

- (b) In the best responses, candidates explained two distinct strategies, their mode of action and linked them to named water-quality measures.

In most responses, candidates identified and explained how at least one strategy resulted in improved water quality. However, some candidates identified quantity strategies instead of quality strategies.

Question 24

- (a) In the best responses, candidates correctly interpreted the graph and made clear links to meeting a market specification.

In mid-range responses, candidates correctly read the graph and understood that fat percent was linked to carcass weight, not the other way around.

Most candidates commented on either carcass weight or fat percentage. However, in weaker responses, candidates did not clearly link this to a market specification.

- (b) In the best responses, candidates explained two or more management techniques and made clear links between management options and their effect on carcass composition. They used correct technical terminology to demonstrate their understanding of the techniques and their application.

In mid-range responses, candidates explained the effect of a management technique on the ability of a farmer to modify carcass composition but used the same technique restated in different ways or outlined several management techniques without demonstrating an understanding of the effect on the animal.

In weaker responses, candidates did not understand the term *carcass composition* and read it as a question on decomposition.

Question 25

- (a) In the majority of responses, candidates identified a characteristic and related this to how modification can improve crop production, for example: by improving the disease resistance of crop plants their photosynthetic capacity will be increased, leading to an improvement in crop production.

In weaker responses, candidates identified one characteristic.

- (b) In better responses, candidates provided characteristics and features of two plant-breeding systems, for example: selective breeding, cross breeding, hybridisation, selective breeding or genetic engineering. These candidates gave a detailed response of how that breeding was carried out.

In mid-range responses, candidates either provided detailed characteristics and features of one plant breeding system or provided some characteristics and features of two plant-breeding systems.

In weaker responses, candidates identified one type of plant-breeding system.

Question 26

- (a) In most responses, candidates demonstrated an understanding of management techniques that contribute to the long-term sustainability of soils.

In better responses, candidates explained the link between specific management techniques and the effects they have on the sustainability of soils.

In weaker responses, candidates listed management techniques or their effect on soils.

- (b) In better responses, candidates showed clear progression of techniques to manage nutrient levels over time. They demonstrated the increasing use of technology in efficiently managing these inputs. These responses contrasted the similarities and differences in nutritional management over time, as well as outlining the advantages and disadvantages of each.

In mid-range responses, candidates identified changes in techniques to manage the nutrient levels over time and included a limited explanation of how they affected the nutritional level of soils.

In weaker responses, candidates only identified techniques used to manage nutrient levels, such as fertiliser application and legume use. They often included soil management techniques that do not contribute to soil nutrient levels.

Question 27

- (a) In better responses, candidates identified and provided a major feature of a suitable selling method for the stated product, such as direct selling, contact selling or sale-yard auctions.

In weaker responses, candidates either simply identified a selling method or an end-market point such as 'Korean export'.

- (b) In better responses, candidates included a government decision relevant to the stated product and linked the effect of this to production or marketing of the product, eg live export bans resulting in an oversupply of cattle unsuited to domestic markets.

In weaker responses, candidates identified a government decision.

- (c) In better responses, candidates provided a judgement on the merit of strategies to attain desired improvements in quality aspects. The highest marks were awarded to candidates whose responses indicated the relative merit of strategies or the value of strategies in particular situations.

In most responses, candidates identified management strategies that would improve the quality of their named product and provided some features of these strategies.

Question 28

- (a) In better responses, candidates explained a range of decisions that could be affected by this cost-price squeeze.

In weaker responses, candidates identified that rising costs lead to lower profits but did not link this to on-farm decision making.

- (b) In many responses, candidates did not define a gross margin or its use in farm management.

In better responses, candidates provided detailed points for the use of gross margins/or limitations of gross margins in farm business management.

In mid-range responses, candidates provided the calculation and its use in comparing enterprises but did not detail its use in farm management.

In weaker responses, candidates identified the use of gross margins in farm management but did not relate these to possible enterprises on the farm.

Question 29

- (a) (i) In most responses, candidates named a research study in biotechnology and identified the research problem.

In weaker responses, candidates either named a research study or identified a research problem in an area of biotechnology.

- (ii) In better responses, candidates outlined in detail the findings used in a research study in biotechnology and provided a sound explanation of how the findings could be used in Australian agricultural production.

In mid-range responses, candidates indicated in general terms the findings of the research study or research problem and gave a brief explanation of how this could be used.

In weaker responses, candidates outlined a research study or a research problem with little or no relevant information of how this could be used.

- (b) In better responses, candidates demonstrated an extensive knowledge and understanding of the production of specific GM crops and their uses with relevant examples. In these responses, candidates also demonstrated knowledge of the ethical/social/environmental/legal and economic implications of GM crops on production and society. These responses were very logical and cohesive throughout.

In mid-range responses, candidates gave some detail of the ethical/social/ environmental /legal and economic implications of the uses of GM crops and demonstrated a reasonable knowledge and understanding of the production of specific GM crops.

In weaker responses, candidates either showed a limited understanding of the production of GM crops or identified some ethical/social/ environmental /legal and economic implications of GM crops.

Teachers are reminded that it is important to investigate GM crops currently in use in Australia, those being trialled or those that government authorities have approved to be trialled.

Question 30

- (a) (i) In most responses, candidates confused their analysis of a relevant research study with either their examination of climatic information, evidence for long-term climate change or the effect of SOI, El-Nino and La-Nina.

In better responses, candidates cited a relevant research study and identified the reason for conducting the research.

In weaker responses, candidates gave a rudimentary reason for undertaking research.

- (ii) In better responses, candidates gave detailed findings of the research study from part (i) and clearly explained how these findings could be used in agricultural production.

In weaker responses, candidates confused climate data with research results. In some responses, candidates listed generalised findings for the research or gave a rudimentary explanation of how the research findings could be used.

- (b) In better responses, candidates described at least two relevant strategies in a logical and cohesive manner and provided basic links to maintenance of production. Common examples included selection and/or breeding of plants and animals suited to hotter and drier climatic conditions, and water storage and irrigation methods.

In the best responses, candidates demonstrated extensive knowledge and understanding of at least two specific management strategies and clearly described their influence on production levels.

In most responses, candidates outlined some management strategies, but did not provide enough detail or relate the strategy to maintenance of production. A number of responses outlined more than two strategies, but demonstrated limited knowledge and understanding.

In weaker responses, candidates identified one or more management strategies such as irrigation or provision of shelter to livestock, but did not outline the strategies or provide a link to production.

Question 31

- (a) (i) In better responses, candidates named a specific research study that related to a new technology and provided a reason for conducting the study.

In weaker responses, candidates did not identify a study and talked in general terms about the need for research into new technologies.

- (a) (ii) The majority of candidates identified a study, provided an outline of the findings and linked these to how the findings could be used in Australian agricultural production.

In mid-range responses, candidates either provided detailed findings of a study or explained how general research in an area could be used in Australian agricultural production.

In weaker responses, candidates provided only an outline of a use of a recent technology.

- (b) Most candidates identified and described a range of recently introduced technologies in detail.

In better responses, candidates made an obvious connection between these technologies and specific effects on farm management practices.

In weaker responses, candidates often outlined the technologies well, but only identified changes in farm management practices in very general terms such as 'saving time' or 'cutting costs', or tended to focus on 'points for and against' without linking the technologies to farm management practices.