



BOARD OF STUDIES
NEW SOUTH WALES

2011 HSC Agriculture Marking Guidelines

Section I, Part A

Multiple-choice Answer Key

Question	Answer
1	B
2	B
3	C
4	A
5	D
6	B
7	C
8	A
9	D
10	C
11	B
12	A
13	D
14	C
15	C
16	D
17	C
18	B
19	A
20	D

Section I, Part B

Question 21 (a)

Criteria	Marks
<ul style="list-style-type: none"> Provides the characteristics or features of a market specification for named product 	2
<ul style="list-style-type: none"> Identifies a market specification for the product OR <ul style="list-style-type: none"> Identifies a market for the product 	1

Question 21 (b)

Criteria	Marks
<ul style="list-style-type: none"> Identifies a product's origin and its end point and includes at least ONE intermediate step in the marketing chain for two marketing options 	3
<ul style="list-style-type: none"> Identifies a product's origin and its end point and includes at least ONE intermediate step in the marketing chain OR <ul style="list-style-type: none"> Identifies TWO marketing options for a product 	2
<ul style="list-style-type: none"> Identifies a product's origin and its end point OR <ul style="list-style-type: none"> Identifies a marketing option for a product 	1

Question 21 (c)

Criteria	Marks
<ul style="list-style-type: none"> Provides a detailed description of an advertising or promotional campaign for the farm product Makes a judgement on the results or outcome of the campaign 	4
<ul style="list-style-type: none"> Outlines an advertising or promotional campaign for a named product Attempts to make a judgement on the success of the campaign 	3
<ul style="list-style-type: none"> Outlines an advertising or promotional campaign for a product OR <ul style="list-style-type: none"> Identifies an advertising or promotional campaign and states a benefit of advertising or promotion 	2
<ul style="list-style-type: none"> Identifies an advertising or promotional campaign for a product OR <ul style="list-style-type: none"> States a benefit of advertising or promotion in general 	1

Question 22 (a)

Criteria	Marks
<ul style="list-style-type: none"> Shows clearly how fluctuations in interest rates over time affect farm decision-making 	3
<ul style="list-style-type: none"> Identifies a trend in interest rates over time and relates this to a decision made by the farmer 	2
<ul style="list-style-type: none"> Identifies a trend in interest rates over time OR <ul style="list-style-type: none"> Identifies that interest rates are a cost to farms 	1

Question 22 (b)

Criteria	Marks
<ul style="list-style-type: none"> Describes components of the Australian agribusiness sector and relates the importance of the family farm to the other components of the agribusiness sector 	5–6
<ul style="list-style-type: none"> Outlines components of the Australian agribusiness sector and shows some relationship between them OR <ul style="list-style-type: none"> Outlines the importance of the family farm to another component of the Australian agribusiness sector 	3–4
<ul style="list-style-type: none"> Outlines a component of the Australian agribusiness sector OR <ul style="list-style-type: none"> Outlines the importance of the family farm to Australian agriculture OR <ul style="list-style-type: none"> Identifies a component(s) of the Australian agribusiness sector 	1–2

Question 23

Criteria	Marks
<ul style="list-style-type: none"> Shows clearly how Australian land capability classification systems determine the land use of farms and relates this to both profitability and sustainability in the short and long term 	4
<ul style="list-style-type: none"> Shows how Australia's land capability classification systems determine the land use of farms and relates this to profitability or sustainability in the short or long term OR <ul style="list-style-type: none"> Shows clearly how Australia's land classification systems determine the land use of farms and relates this to profitability and sustainability 	3
<ul style="list-style-type: none"> Outlines an effect of land capability classification on profitability or sustainability OR <ul style="list-style-type: none"> Shows how Australian land capability systems determine the land use of farms and relates this use to profitability or sustainability 	2
<ul style="list-style-type: none"> Defines land capability classification OR <ul style="list-style-type: none"> Identifies an aspect of profitability or sustainability 	1

Question 24 (a)

Criteria	Marks
<ul style="list-style-type: none"> States treatment A 	1

Question 24 (b)

Criteria	Marks
<ul style="list-style-type: none"> Correctly labels both axes (Yield g/cauliflower on Y axis; Treatments on X axis) (including units) and plots an appropriate graph with correct values of mean yield for all treatments 	3
<ul style="list-style-type: none"> Correctly labels both axes and plots an appropriate graph OR <ul style="list-style-type: none"> Correctly labels both axes and plots correct values OR <ul style="list-style-type: none"> Uses an appropriate graph with correct values 	2
<ul style="list-style-type: none"> Correctly labels axes OR <ul style="list-style-type: none"> Uses an appropriate graph (column graph/histogram) OR <ul style="list-style-type: none"> Plots correct values of mean yield treatments (1250, 1500 and 1850) 	1

Question 24 (c)

Criteria	Marks
<ul style="list-style-type: none"> Describes an alternative experimental design that could be used and relates the role of this to minimising the effects of environmental influences to better measure the effect of the treatment 	3
<ul style="list-style-type: none"> Identifies an alternative experimental design that could be used and links this to overcoming an environmental effect on the trial 	2
<ul style="list-style-type: none"> Identifies a need to randomise, further replicate or conduct the trial somewhere else OR <ul style="list-style-type: none"> Identifies an environmental effect that may trend across the area and effect results 	1

Question 25 (a)

Criteria	Marks
<ul style="list-style-type: none"> Identifies the unfertilised as the control and relates a possible reason to the reduction in grain yield where inorganic fertiliser has been applied 	3
<ul style="list-style-type: none"> Outlines a possible reason for reduction in grain yield for the inorganic fertiliser treatment OR <ul style="list-style-type: none"> Identifies the unfertilised as the control and identifies a possible reason for the reduced grain yield 	2
<ul style="list-style-type: none"> Identifies the unfertilised treatment as the control OR <ul style="list-style-type: none"> Identifies a possible reason that reduces a grain yield OR <ul style="list-style-type: none"> Identifies that grain yield has reduced when inorganic fertiliser is applied 	1

Question 25 (b)

Criteria	Marks
<ul style="list-style-type: none"> Identifies that biosolid resulted in the highest grain yield and proposes a detailed reason why a maize producer may decide not to use biosolid fertiliser 	4
<ul style="list-style-type: none"> Identifies that biosolid resulted in the highest yield and outlines a possible reason why a maize producer may decide not to use it 	3
<ul style="list-style-type: none"> Identifies that the use of biosolid resulted in the highest yield and states a possible reason why a maize producer may decide not to use it OR <ul style="list-style-type: none"> Outlines a possible reason why a maize producer may decide not to use biosolid 	2
<ul style="list-style-type: none"> Identifies that the use of biosolid results in the highest yield OR <ul style="list-style-type: none"> Identifies a possible reason why a maize producer may decide not to use biosolid 	1

Question 26 (a)

Criteria	Marks
<ul style="list-style-type: none"> Explains that ruminant animals produce larger volumes of methane due to biofermentation processes that occur in the rumen and that pigs, being monogastrics, do not produce as much methane as ruminants due to the different digestive process and food intake 	3
<ul style="list-style-type: none"> Identifies that pigs are monogastric or that cattle and sheep are ruminants and links this to the different process occurring in the digestive system 	2
<ul style="list-style-type: none"> Identifies that pigs are monogastrics or that cattle and sheep are ruminants OR <ul style="list-style-type: none"> Identifies a difference in the digestive process or digestive system 	1

Question 26 (b)

Criteria	Marks
<ul style="list-style-type: none"> Relates the changing energy and protein requirements of an animal resulting from different production stage requirements to adjustments of feed and describes ways these changing requirements may be met 	4
<ul style="list-style-type: none"> Outlines the changing energy and protein requirements of an animal at different production stages and links this to adjustments of feed to meet these requirements Outlines a change in feeding practice resulting from a change in feed demand by animals or changes in the feed type 	3
<ul style="list-style-type: none"> Identifies a change in energy or protein requirements of an animal and links this to a different production stage requirement of the animal OR <ul style="list-style-type: none"> Identifies a way(s) that a feed can be adjusted to meet a change in energy or protein requirement(s) OR <ul style="list-style-type: none"> Identifies a change in energy and protein requirement(s) for an animal OR <ul style="list-style-type: none"> Outlines changes in feeding practices for a named animal OR <ul style="list-style-type: none"> Outlines changes in protein and energy requirements for a named animal 	2
<ul style="list-style-type: none"> Identifies a change in energy or protein requirement OR <ul style="list-style-type: none"> States a way the feeding of an animal can be adjusted 	1

Question 27

Criteria	Marks
<ul style="list-style-type: none"> • Relates the management strategies of a named IPM program to control an animal pest/disease (eg in terms of host, pathogen and environment for disease) • Places a value judgement on the IPM program 	6–7
<ul style="list-style-type: none"> • Relates the management strategies of a named IPM program to the control of the animal pest/disease OR <ul style="list-style-type: none"> • Outlines a method of control or IPM program to manage an animal disease/pest • Relates the method to the control • Provides a value judgement of the method 	4–5
<ul style="list-style-type: none"> • Outlines methods of control to manage an animal pest/disease OR <ul style="list-style-type: none"> • Describes method(s) of control to manage an animal disease/pest and relates the method to the control 	2–3
<ul style="list-style-type: none"> • Identifies a method of control to manage an animal pest or disease OR <ul style="list-style-type: none"> • Outlines the concept of Integrated Pest Management 	1

Question 28 (a)

Criteria	Marks
<ul style="list-style-type: none"> • Provides characteristics and features of a strategy farmers use and relates this strategy to how it manages sustainability of water for agricultural production 	3
<ul style="list-style-type: none"> • Provides characteristics and features of a strategy farmers use to manage the sustainability of water for agricultural production OR <ul style="list-style-type: none"> • Outlines strategies farmers use to manage sustainability of water for agricultural production 	2
<ul style="list-style-type: none"> • Identifies a strategy farmers use to manage sustainability of water for agricultural production 	1

Question 28 (b)

Criteria	Marks
<ul style="list-style-type: none"> Describes how farm management practices have contributed to a named soil degradation problem Describes how a procedure can be used to alleviate the problem 	6–7
<ul style="list-style-type: none"> Outlines practices that contribute to a named soil degradation problem Outlines a procedure that can be used to alleviate a named soil degradation problem 	4–5
<ul style="list-style-type: none"> Outlines a practice(s) that contributes to a named soil degradation problem Outlines a procedure that can alleviate a named soil degradation problem 	2–3
<ul style="list-style-type: none"> Identifies a soil degradation problem OR <ul style="list-style-type: none"> Identifies a farm management practice that contributes to a soil degradation problem OR <ul style="list-style-type: none"> Identifies a practice that can alleviate a soil degradation problem 	1

Section II
Question 29 (a) (i)

Criteria	Marks
<ul style="list-style-type: none"> Names TWO ways biofuel may be produced from agricultural crops 	2
<ul style="list-style-type: none"> Names ONE way biofuel may be produced from agricultural crops 	1

Question 29 (a) (ii)

Criteria	Marks
<ul style="list-style-type: none"> Demonstrates thorough knowledge and understanding of biofuels Relates biofuel production to the sustainable and efficient use of carbon Places a value judgement on biofuel production on sustainable and efficient use of carbon Organises information in a well-reasoned and cohesive response 	5–6
<ul style="list-style-type: none"> Demonstrates sound knowledge and understanding Describes biofuel production in terms of the sustainability and efficient use of carbon Organises some information in a well-reasoned and cohesive response 	3–4
<ul style="list-style-type: none"> Identifies biofuel production as a sustainable and efficient use of carbon 	1–2

Question 29 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Demonstrates a thorough knowledge and understanding of a study carried out to investigate the development of a recent agricultural technology • Identifies and relates the components of the study including research design, methodology, data analysis, presentation, conclusions and recommendations • Provides relevant examples that support the response • Effectively communicates ideas in a logical and cohesive manner 	10–12
<ul style="list-style-type: none"> • Demonstrates a sound knowledge and understanding of a study carried out to investigate the development of a recent agricultural technology • Provides an outline of the components of the study including methodology, design, data analysis, presentation, conclusions and recommendations giving some relationship between these components • Provides relevant examples • Communicates ideas in an organised manner 	7–9
<ul style="list-style-type: none"> • Demonstrates a sound knowledge and understanding of the development of ONE agricultural biotechnology • Uses relevant examples • Communicates ideas in an organised manner 	4–6
<ul style="list-style-type: none"> • Demonstrates a basic knowledge and understanding of the development or implementation of ONE agricultural biotechnology • Uses narrow example(s) • Communicates ideas in a basic form 	1–3

Question 30 (a) (i)

Criteria	Marks
<ul style="list-style-type: none"> • States that the SOI is an index based on differences in air pressure between two places across the Pacific 	2
<ul style="list-style-type: none"> • Identifies that the SOI is associated with air pressure <p>OR</p> <ul style="list-style-type: none"> • Identifies it is a measure of the difference in a climatic variable between two places or across the Pacific 	1

Question 30 (a) (ii)

Criteria	Marks
<ul style="list-style-type: none"> • Demonstrates thorough knowledge and understanding of the process causing the climate events of La Niña and El Niño • Provides features and characteristics of the process that causes the climate events of La Niña and El Niño 	5–6
<ul style="list-style-type: none"> • Demonstrates sound knowledge and understanding of the process causing the climate events of La Niña and El Niño OR <ul style="list-style-type: none"> • Identifies the process causing and describes La Niña and El Niño 	3–4
<ul style="list-style-type: none"> • Identifies the process causing La Niña and El Niño OR <ul style="list-style-type: none"> • Outlines the climate events La Niña and El Niño 	1–2

Question 30 (b)

Criteria	Marks
<ul style="list-style-type: none"> • Demonstrates a thorough knowledge and understanding of management options to manage climatic variability in plant or animal production • Makes a detailed judgement of the value of management options that can manage climatic variability • Provides relevant examples that support the response • Effectively communicates ideas in a logical and cohesive manner 	10–12
<ul style="list-style-type: none"> • Demonstrates a sound knowledge and understanding of management options to manage climatic variability in plant or animal production • Explains the value of management options that can manage climatic variability • Provides relevant examples • Communicates ideas in an organised manner 	7–9
<ul style="list-style-type: none"> • Demonstrates a basic knowledge of management options to manage climatic variability in plant or animal production • Outlines the value of management options that can manage climatic variability • Uses narrow examples • Communicates ideas in a basic form 	4–6
<ul style="list-style-type: none"> • Demonstrates a limited knowledge of management options to manage climatic variability in plant or animal production • Communicates simple ideas 	1–3

Question 31 (a) (i)

Criteria	Marks
• Supports an argument using examples for the need for research in the development of agricultural technologies	4
• Supports an argument for the need for research in the development of agricultural technologies	3
• Outlines the need for research in the development of an agricultural technology	2
• Identifies a need for research in the development of agricultural technology	1

Question 31 (a) (ii)

Criteria	Marks
• Explains in detail reasons why a newly developed agricultural technology may NOT be widely adopted	4
• Outlines some reasons why a newly developed agricultural technology may NOT be widely adopted	3
• Identifies a newly developed agricultural technology OR • States a reason why a newly developed agricultural technology may NOT be widely adopted	1–2

Question 31 (b)

Criteria	Marks
<ul style="list-style-type: none">• Demonstrates a thorough knowledge and understanding of the benefits of recent developments in computer related technologies• Discusses in detail how factors associated with agricultural production are managed AND monitored• Provides relevant examples that support the response• Effectively communicates ideas in a logical and cohesive manner	10–12
<ul style="list-style-type: none">• Demonstrates a sound knowledge of the benefits of recent developments in computer related technologies• Briefly explains how some factors associated with agricultural production are managed AND monitored• Provides relevant examples• Communicates ideas in an organised manner	7–9
<ul style="list-style-type: none">• Demonstrates a basic knowledge of the benefits of recent developments in computer related technology• Outlines how some factors associated with agricultural production are monitored OR managed• Uses narrow examples• Communicates ideas in a basic form	4–6
<ul style="list-style-type: none">• Demonstrates limited knowledge of a recent development in computer related technology• Communicates simple ideas	1–3

Agriculture

2011 HSC Examination Mapping Grid

Section I, Part A

Question	Marks	Content	Syllabus outcomes
1	1	Process of photosynthesis	H2.1
2	1	Role of hormones	H2.2
3	1	Fate of energy	H2.2
4	1	Impact of financial pressures	H3.1
5	1	Process of NAR	H2.1
6	1	Process of plant growth and development	H2.1
7	1	Collection and analysis of data	H4.1
8	1	Beneficial relationship between microbes and plants	H2.1
9	1	Chemical and physical characteristics of soil	H1.1
10	1	Role of plant hormones	H2.1
11	1	Supply and demand for a product	H3.1
12	1	Reproductive techniques	H3.3
13	1	Government influence	H3.1
14	1	Marketing strategies	H3.2
15	1	Animal ethics and welfare	H2.2
16	1	Responsible and strategic use of chemicals	H1.1
17	1	Problems that may occur in meeting market specifications	H3.4, H4.1
18	1	Problems that may occur in meeting market specifications	H3.2, H4.1
19	1	Chemical and physical characteristics of soil	H1.1
20	1	Role of hormones	H2.2

Section I, Part B

Question	Marks	Content	Syllabus outcomes
21 (a)	2	Importance of product specification in marketing of a product	H3.2
21 (b)	3	Marketing chain for a product	H3.2
21 (c)	4	Role of advertising and promotions in marketing	H3.2
22 (a)	3	Impact of financial pressure	H3.1
22 (b)	6	Place of the farm in the wider agribusiness sector	H3.1

23	4	Role of individual farmers; tension between sustainability and profitability	H1.1
24 (a)	1	Competition in plant communities	H2.1
24 (b)	3	Collection and analysis of data	H4.1
24 (c)	3	Experimental design	H4.1
25 (a)	3	Sustainable techniques to maintain and/or improve soil fertility	H1.1, H2.1, H4.1
25 (b)	4	Managing the constraints on plant growth and development to maximise production	H2.1
26 (a)	3	Ruminant and monogastric digestion	H2.2
26 (b)	4	Managing the nutritional requirements of monogastrics and ruminants in terms of digestive physiology	H2.2
27	7	Integrated pest management	H2.2
28 (a)	3	Sources of H ₂ O and management of water	H1.1
28 (b)	7	Farming practices that have contributed to soil degradation	H1.1

Section II

Question	Marks	Content	Syllabus outcomes
29 (a) (i)	2	Biofuel production	H3.4
29 (a) (ii)	6	Ethical concerns and controversy surrounding the use of biotechnology	H5.1
29 (b)	12	Research into technological developments	H4.1
30 (a) (i)	2	Causes of climate variability	H5.1
30 (a) (ii)	6	Causes of climate variability	H5.1
30 (b)	12	Management techniques available to farmer to minimise risk related to climate variability	H3.4
31 (a) (i)	4	The need for research	H4.1
31 (a) (ii)	4	Reasons for adopting technology	H3.4
31 (b)	12	Development of agricultural technologies	H5.1