

Agriculture

Paper 1

2007
Higher School Certificate
Trial Examination

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Board approved calculators may be used
- Write using black or blue pen
- Draw diagrams using pencil
- Write your student number and/or name at the top of every page

Total Marks - 70

Section I - Pages 2 – 7

Total marks (25)

- Attempt Questions 1 – 3
- Allow about 40 minutes for this section

Section II - Pages 8 – 11

Total marks (30)

- Attempt Questions 4 – 5
- Allow about 50 minutes for this section

Section III

Total marks (15) – Page 12

- Attempt ONE question from Questions 6 – 9
- Allow about 30 minutes for this section

This paper MUST NOT be removed from the examination room

Section I

Total marks (25)

Attempt Questions 1–3

Allow about 40 minutes for this section

Answer the questions in the spaces provided.

Question 1 (10 marks)

Marks

Name ONE farm product you have studied.

Name of product:

(a) Identify ONE measure used to identify the quality of the product.

1

(b) Outline how the raw product can be processed and value-added prior to being sold to consumers.

2

Question 1 continues on the next page

(c) Farm products vary in their quality, and this affects their end use.

Explain how an advance in technology has improved the quality of the product and the impact this has had on its end use.

3

(d) Variations in the marketplace or changes in consumer demand can influence farmers to change their production techniques or products.

Explain this statement using your chosen product.

4

End of Question 1

Question 2 (7 marks)

Marks

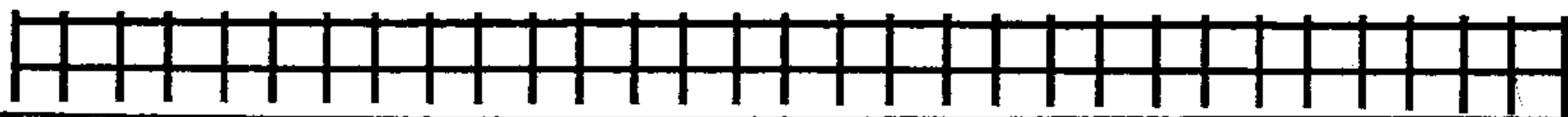
The table below indicates the price of grain over time.

Price of grain over time

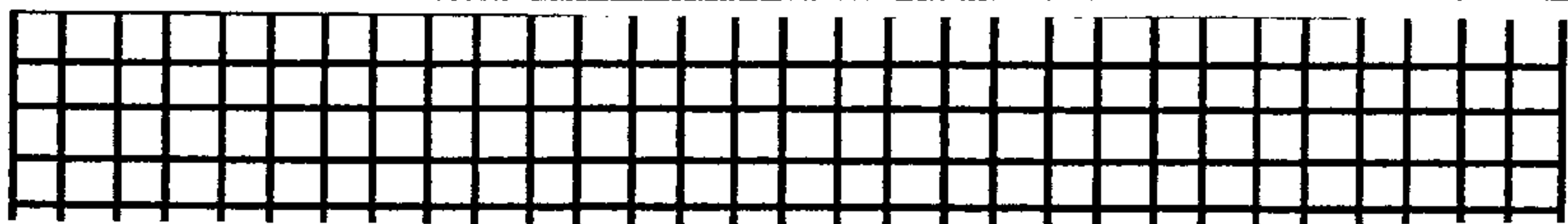
Year	Price (\$/tonne)
2000	460
2001	400
2002	310
2003	390
2004	480
2005	500
2006	580

(a) Construct a graph showing this information.

3



DO NOT WRITE IN THIS BOOKLET – use your own paper



(b) The table indicates that the prices for grain fluctuate greatly from year to year.

Describe ONE factor that may lead to these fluctuations in prices.

2

(c) Outline how farmers can deal with the problem of variable annual income.

2

End of Question 2

DO NOT WRITE IN THIS BOOKLET – use your own paper

Recommended Response Length (this is a guide only).	
Value of the question (marks)	Recommended length of answer (number of lines)
1	2
2	4
3	7
4	10
5	13
6	16
7	19
8	22

Question 3 (8 marks)

An experiment was conducted to determine the effect of giving grass-fed dairy cows different additional feeds. The treatments compared were:

- No additional feed
- 5kg/day lucerne hay
- 5kg/day lucerne hay plus 0.5kg/day oats
- 0.5kg/day oats

Each treatment was replicated four times.

Cows were all the same age and on the same lactation.

Two Holstein cows and two Jersey cows were used for the experiment.

The results of the experiment are shown in the table below.

Milk Production (litres/animal/day) on various feeding treatments						
Treatments	Milk Production (litres/animal/day)					Mean
	Replicates					
	1	2	3	4		
No additional feed	22	25	24	26	OWN PAPER	USE YOUR
Lucerne	29	31	32	32		
Lucerne & Oats	34	37	38	36		
Oats	30	31	31	32		

Marks

(a) Calculate the mean for EACH of the feed treatments AND write the answers in the spaces provided in the table above.

2

(b) Identify which feed treatment is the control AND describe why a control is used.

3

(c) Describe THREE ways the experiment could be modified to improve the accuracy of the findings.

3

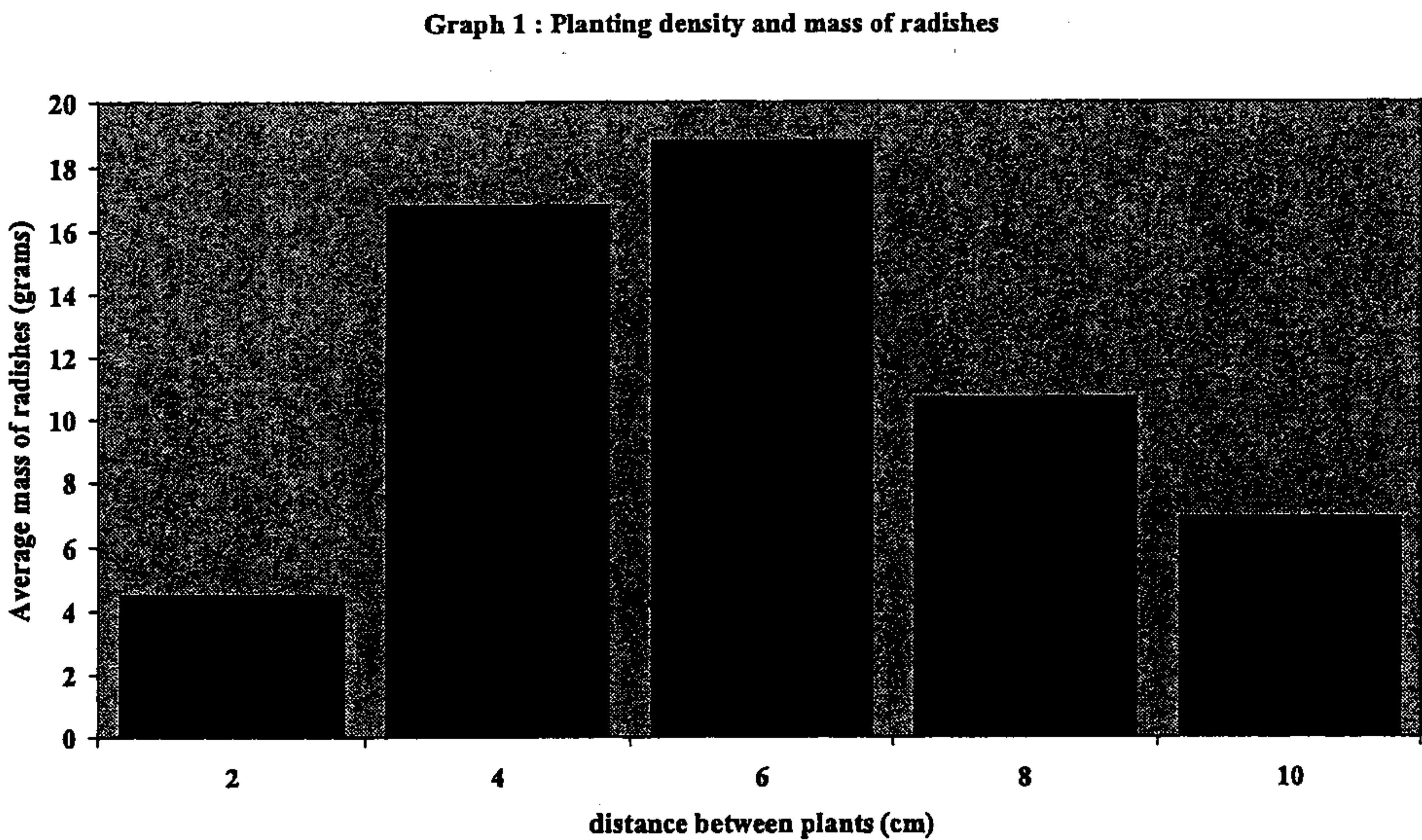
End of Section I

Section II
Total marks (30)
Attempt Questions 4 and 5
Allow about 50 minutes for this section

Answer the questions in the spaces provided.

Question 4 (15 marks) Marks

One hundred radish seeds were planted in five garden plots at five different densities (20 seeds per plot). After a period of 8 weeks, ten radishes were randomly selected from each plot, weighed and then the average mass for each density was calculated. The results of the trial are shown in the graph below.



- (a) Recommend a suitable conclusion for this experiment. 2
- (b) Account for the differences in the average mass of the radishes. 3
- (c) Explain how TWO factors, other than planting density, may cause interference in plant growth/productivity. 4
- (d) Discuss the role of chemical fertilisers on the productivity of a NAMED plant enterprise. 6

End of Question 4

A number of cattle breeding programs were analysed and the percentage increase in weaning weight of calves determined as shown in Table 1.

Table 1: The hybrid vigour benefits gained through various crossbreeding strategies.

Breeding Strategy	% Hybrid vigour
1. Purebred A X Purebred A	0
2. Purebred A X Purebred B	8.5
3. Crossbreed AB X Purebred C	14.8

- (a) Identify the purpose of crossbreeding in animal production.

2
- (b) Describe ONE example of how crossbreeding has benefited an animal enterprise you have studied.

3
- (c) Name ONE animal hormone AND explain its effects on reproduction OR behaviour.

4
- (d) Discuss drought feeding strategies used by farmers to manage the nutritional requirements of an animal during its growth and development.

6

End of Section II

Recommended Response Length (this is a guide only).	
Value of the question (marks)	Recommended length of answer (number of lines)
1	2
2	4
3	7
4	10
5	13
6	16
7	19
8	22

Section III

Total marks (15)

Attempt ONE question from Questions 6–9

Allow about 30 minutes for this section

Answer the question on your own paper or writing booklet, if provided.

Question 6 (15 marks)

Marks

- | | | |
|-----|---|-----------|
| (a) | Describe the importance of chemical labels for safe practice AND usage. | 5 |
| (b) | Discuss problems agricultural chemicals have on the environment and host organisms. | 10 |

OR

Question 7 (15 marks)

- | | | |
|-----|---|-----------|
| (a) | Describe the process of growth and development of farm animals in terms of bone, muscle and fat. | 5 |
| (b) | Discuss the role of the various ingredients of a ration in meeting the nutritional needs of ONE identified farm animal. | 10 |

OR

Question 8 (15 marks)

- | | | |
|-----|---|-----------|
| (a) | Describe the role of native pasture species in animal production. | 5 |
| (b) | Discuss the ways farmers manipulate genotypes and the environment to increase plant productivity. | 10 |

OR

Question 9 (15 marks)

- | | | |
|-----|---|-----------|
| (a) | Describe the tensions that exist between sustainability AND short term profitability. | 5 |
| (b) | Discuss the role of farmers, the wider community AND government in conserving water and protecting waterways. | 10 |

End of paper

Agriculture

Paper 2

2007
Higher School Certificate
Trial Examination

General Instructions

- Paper 2 should be attempted only by students who have studied Electives
- Reading time – 5 minutes
- Working time – 1 hour
- Board approved calculators may be used
- Write using black or blue pen
- Draw diagrams using pencil
- Write your student number and/or name at the top of every page

Total Marks - 30

- Attempt TWO Questions from Questions 1 – 6
- Allow about 30 minutes for each question

Total marks (30)

Attempt TWO questions from Questions 1–6
Allow about 30 minutes for each question

Question 1 – Agribusiness (15 marks)

Marks

- | | | |
|-----|---|---|
| (a) | Describe the choices available to a farm business to obtain finance for its operations. | 3 |
| (b) | Explain the techniques which may be used to analyse a farms financial situation. | 4 |
| (c) | Evaluate the range of alternative selling systems available for a NAMED agricultural product. | 8 |

Question 2 – Animal Management (15 marks)

- | | | |
|-----|---|---|
| (a) | Describe management techniques available to farmers to manipulate reproduction in farm animals. | 3 |
| (b) | Explain how heritabilities affect the types of breeding programs used on a farm. | 4 |
| (c) | Evaluate the impact of changes being made to animal breeding systems on product quality for a range of animals. | 8 |

Question 3 – Horticulture (15 marks)

- | | | |
|-----|---|---|
| (a) | Describe how managers manipulate parts of the horticultural system to achieve environmental sustainability. | 3 |
| (b) | Explain how plant response to the environment affects the production cycle of a horticultural system. | 4 |
| (c) | Evaluate the influence of changing domestic markets on post harvest handling in horticulture. | 8 |

Question 4 – Innovation and Diversification (15 marks)

- | | | |
|-----|--|---|
| (a) | Describe how knowledge of plant or animal biology allows management of alternative production systems. | 3 |
| (b) | Explain how THREE techniques may be used to market an innovation. | 4 |
| (c) | Evaluate the impact of social barriers on innovation in agricultural systems. | 8 |

Question 5 – Plant Management (15 marks)

- | | | |
|-----|--|---|
| (a) | Describe how the management of plant hormones can be used in plant production systems. | 3 |
| (b) | Explain the physiological processes involved in water uptake in plants. | 4 |
| (c) | Evaluate the impact of management of plant/cropping systems on nutrient cycling and fertility. | 8 |

Question 6 – Sustainable Land and Resource Management (15 marks)

- | | | |
|-----|--|---|
| (a) | Describe how managers can use a land capability assessment to ensure sustainable land use. | 3 |
| (b) | Explain the causes of soil structural decline. | 4 |
| (c) | Identify a recommended procedure for reducing one type of soil degradation. Evaluate this procedure in terms of the physical and biological processes occurring in the soil. | 8 |

End of paper

DO NOT WRITE IN THIS BOOKLET – use your own paper

NSW INDEPENDENT TRIAL EXAMS – 2007
AGRICULTURE (PAPER 1) – HSC TRIAL
MARKING GUIDELINES

Section I

Question 1 (10 marks)

(a) *Outcome assessed: H3.2*

Criteria	Mark
Identifies ONE measure used to identify the quality of the product.	1

Answers could include: Size, colour, weight, fat score.

(b) *Outcome assessed: H3.1, H3.2, H3.3*

Criteria	Mark
Describes how the raw product can be processed and links this to value adding prior to sale.	2
Describes how the raw product can be processed prior to sale.	1

Answers could include: Description of packaging, pre cooking, dressing, inclusion with other items and how it adds to the overall value of the product.

(c) *Outcome assessed: H3.2, H3.3*

Criteria	Marks
<ul style="list-style-type: none"> ▪ Identifies ONE advance in technology for the named product. ▪ Explains how the use of the technology improves the quality of the product. ▪ Explains how the technology has had an impact on the products end use. 	3
<ul style="list-style-type: none"> ▪ Identifies ONE advance in technology. ▪ Provides some explanation of how quality is improved. <p>OR</p> <ul style="list-style-type: none"> ▪ Identifies ONE advance in technology. ▪ Briefly explains how the technology has had an impact on the products end use. 	2
<ul style="list-style-type: none"> ▪ Identifies ONE advance in technology. 	1

Answers could include: Computers and digital cameras used to assess the quality of roses and place them into classes for packaging. This provides a more accurate quality control, which improves the overall quality of the product received. This may mean an increase in the price of the product to the consumer.

(d) *Outcome assessed: H.3.1, H.3.2, H3.3*

Criteria	Marks
<ul style="list-style-type: none"> ▪ Provides a comprehensive explanation of the statement relating the changes in consumer demand and variations in the marketplace to farmers changing their production techniques or products. ▪ Uses many examples of change (marketplace, demand, production techniques, products) applicable to the chosen product. 	4
<ul style="list-style-type: none"> ▪ Provides an explanation of the statement relating the changes in consumer demand and variations in the marketplace to farmers changing their production techniques or products. ▪ Uses several examples of change (marketplace, demand, production techniques, products) applicable to the chosen product. 	3
<ul style="list-style-type: none"> ▪ Attempts to relate the changes in consumer demand and variations in the marketplace to farmers changing their production techniques or products. ▪ Uses few examples of change (marketplace, demand, production techniques, products) applicable to the chosen product. 	2
<ul style="list-style-type: none"> ▪ Provides one or two points about changes in the marketplace and how they relate to production. 	1

Answers could include: Consumers demand larger cuts of meat with smaller amounts of fat. Farmers have addressed this demand by selecting more muscled animals with lower fat scores. Have also selected particular species which carry the required traits with which to breed with.

Question 2 (7 marks)

(a) Outcome assessed: H1.1

Criteria	Mark
Data is correctly plotted on a line graph or histogram, including appropriately labelled axes.	3
The majority of the data has been recorded correctly, with a minor misrepresentation in one area.	2
Some data has been transposed to the grid.	1

Answers could include: A labelled line graph or histogram.

(b) Outcome assessed: H1.1, H2.1, H2.2

Criteria	Mark
<ul style="list-style-type: none">Identifies ONE factor that can lead to price fluctuations.Describes how the factor causes the price fluctuation.	2
<ul style="list-style-type: none">Identifies ONE factor that can lead to price fluctuations. OR <ul style="list-style-type: none">Provides some explanation of how price fluctuations could occur without using a specific example.	1

Answers could include: Consumer demand, drought, floods, over supply plus a description of how one of these can occur.

(c) Outcome assessed: H1.1, H2.1, H2.2

Criteria	Marks
Outlines ONE method farmers can use to deal with variable income.	2
Identifies ONE method farmers can use to deal with variable income.	1

Answers could include: Diversification, secondary income, forward selling/contracts. Answer should outline how the farmer uses the chosen method to deal with variable income.

Question 3 (8 marks)

(a) Outcome assessed: H2.1

Criteria	Mark
Calculates all of the means and places them in the table correctly.	2
Calculates at least TWO means correctly.	1

Answers could include: No additional feed: 24.25; Lucerne: 31; Lucerne and Oats; 36.25, Oats: 31.

(b) Outcome assessed: H2.1

Criteria	Mark
<ul style="list-style-type: none">Identifies which treatment is the control.Provides an in-depth description of why a control is used.	3
<ul style="list-style-type: none">Identifies which treatment is the control.Provides some idea of why a control is used.	2
Identifies the control.	1

Answers could include: No additional feed, control is an untreated sample used to compare before and after treatments.

(c) Outcome assessed: H1.1

Criteria	Marks
Describes THREE ways the experiment could be modified to allow for more accurate results.	3
Describes TWO ways the experiment could be modified to allow for more accurate results.	2
Describes ONE way the experiment could be modified to allow for more accurate results.	1

Answers could include: More replications, same breed of cows, calculate SD's and look at the variance between samples, ensure that the feed e.g. all of the oats, lucerne etc all came from the same batch, be sure that all of cows were exposed to the same environmental conditions.

Section II

Question 4 (15 marks)

(a) Outcome assessed: H2.1

Criteria	Mark
Suggests a correct relationship between the average mass of radishes and the distance between plants/planting density.	2
Identifies variations in average mass of radishes and/or distance between plants.	1

Answers could include: The average mass of radishes is greatest when radishes are planted 6cm apart (or could say between 4 and 6cm apart).

(b) Outcome assessed: H2.1

Criteria	Mark
States a reason for the change in average mass of radishes in terms of planting density and competition.	3
Identifies changes in the mass of radishes and planting density without a clear reason.	2
Identifies changes in mass of radishes or planting density.	1

Answers could include: Plants perform best under some degree of competitive stress. Radishes with 2cm spacing experience too much competition, which reduces their growth; whilst those spaced 10cm apart have little competition. Radishes planted at 4 or 6 cm spacing grow more vigorously because they compete for resources.

(c) Outcome assessed: H2.1

Criteria	Marks
▪ Outlines TWO factors that may cause interference and relates each of these factors to changes in plant growth/ productivity.	4
▪ Outlines ONE factor that may cause interference and relates this factors to a change in plant growth/ productivity. AND ▪ Outlines ONE factor that may cause interference.	3
▪ Outlines TWO factors may cause interference. OR ▪ Outlines the effect of TWO factors on plant growth/productivity. OR ▪ Outlines ONE factor that may cause interference and relates this to plant production.	2
▪ Outlines ONE factor that may cause interference. OR ▪ Outlines ONE effect of interference. OR ▪ Identifies TWO factors that may cause interference.	1

Answers could include:

1. Allelopathy – certain plants e.g. Thornapple produce toxic chemicals that inhibit the germination and root development of wheat seeds. This causes considerable reductions in the growth, vigour and yield of the wheat crop.
2. Modification of the environment – plants such as Paterson's Curse grow in the form of a broad rosette in their juvenile stage. The rosettes shade out other useful plants and their growth will be severely reduced due to lack of light for photosynthesis.

(d) Outcome assessed: H1.1

Criteria	Marks
• Identifies the issues by providing points for and /or against the use of chemical fertilisers in improving plant production linking it to the nutrient requirements of the (named) plant, farm productivity/profitability and sustainability.	5-6
• Provides a number of points for and against the use of chemical fertilisers OR • Outlines the use of chemical fertilisers and how they are used to improve plant production	3-4
• Provides one or two points either for or against the use of fertilisers OR • Outlines in general terms the use of fertilisers.	1-2

Answers could include:

Chemical fertilisers e.g superphosphate, Nitram are commonly used to provide nutrients for healthy plant growth and sustainable crop yields. They are useful when the nutrient they provide is lacking in the soil e.g. Nitram on wheat crops - puts nitrogen into the soil to promote growth and increases grain protein levels. This increases quantity and quality of yield and profit. When used in conjunction with soil tests, nutrient deficiencies can be identified and application rates determined to provide the necessary nutrients at a cost effective rate.

Without soil tests, excessive or unnecessary fertiliser levels can cause nutrient toxicities. As fertilisers are expensive, incorrect application/ rate can increase production costs without bringing increased profit from the crop when harvested. Excessive fertiliser use can change soil pH (which is difficult and costly to rectify), or leach through to waterways causing algal blooms.

Question 5 (15 marks)

(a) *Outcome assessed: H2.2*

Criteria	Mark
Identifies that due to hybrid vigour, crossbreeding will increase the weaning weight of calves.	2
States that crossbreeding increases hybrid vigour.	1

Answers could include: Due to hybrid vigour, crossing A and B increases calf weaning weights by 8.5% whilst crossing AB with C increases weaning weights by 14.8%.

(b) *Outcome assessed: H2.2*

Criteria	Mark
Describes an example of crossbreeding in an animal enterprise and clearly links it to a significant production benefit.	3
Describes an example of crossbreeding without a clear link to how it benefits production. OR States a production benefit with no description of the crossbreeding program.	1-2

Answers could include: Merino ewes are joined to Border Leicester rams to produce first cross ewes which have the benefits of climatic adaptability and good fleece characteristics from the merino combined with the improved fertility, good mothering ability and larger frame of the B.L. which makes them suitable mothers for prime lamb production.

(c) *Outcome assessed: H2.2*

Criteria	Marks
Identifies ONE animal hormone and clearly links its secretion to changes in the animal's reproductive function or behaviour.	4
Identifies an animal hormone without a clear explanation of its effects on reproduction or behaviour.	2 – 3
▪ Names a hormone. OR ▪ Identifies a change in reproductive function or behaviour.	1

Answers could include: Oestrogen is a hormone produced by the pituitary gland that brings on 'heat' behaviour so a cow will accept a bull during mating; stimulates mucous production and swelling of the vulva and stimulates development of the endometrium in the uterus in preparation for implantation of an embryo.

(d) Outcome assessed: H2.2

Criteria	Marks
Identifies different drought feeding strategies used during named growth/ development stages, providing points for and /or against their use at that time and clearly linking them to the nutritional requirements of the animal and the production benefits that follow.	5 – 6
<ul style="list-style-type: none"> Provides a number of points for and against different feeding options used during drought. OR <ul style="list-style-type: none"> Outlines ONE feeding option and identifies how/when it is used during a stage of the animal's growth and development. 	3 – 4
<ul style="list-style-type: none"> Outlines how the nutritional requirement of an animal change during its growth and development. OR <ul style="list-style-type: none"> Outlines in general terms the problems of feeding animals in drought conditions. 	1 – 2

Answers could include: When insufficient pasture is available for cattle during drought a farmer can:

- Supplementary feed young weaners with a grain mix or prepared feed ration to provide necessary carbohydrates, proteins and other nutrients needed for growth and development of muscle and fat to finish the animal to meet market specifications. This option provides a high plane of nutrition and promotes rapid growth but can be very costly during a prolonged drought.
- Providing hay or straw e.g. barley straw or sorghum stubble together with molasses & urea (in lick drums) can be a cheaper option for feeding dry cows on a maintenance ration. The molasses increases appetite and improves palatability of dry feed whilst the urea is a source of non-protein nitrogen which enables them to manufacture microbial protein and meet their nutritional requirements. Ruminant animals can upgrade low quality feed and manufacture microbial protein as well as vitamins B and C. This option is suitable when animals are neither pregnant nor lactating and only need a maintenance ration, however it creates extra labour for the farmer.

Section III

Question 6 (15 marks)

(a) Outcome assessed: H1.1

Criteria	Mark
Describes role of label and importance of information in achieving safe practice and use.	3 – 5
Identifies some of the information found on a chemical label and relates to either safe practice or usage.	1 – 2

Answers could include: The label is a legal document that identifies nature of the chemical, its mode of action, directions for use, safe storage and disposal as well as environmental considerations and as such is of fundamental importance in the safe use of a chemical.

(b) Outcome assessed: H1.1

Criteria	Mark
Discusses a number of problems to the environment and to host organisms through the use of agricultural chemicals.	8 – 10
Discusses either a number of problems to the environment OR to the host, through the use of chemicals.	4 – 7
Identifies a number of problems to the environment OR to the host, through the use of chemicals.	1 – 3

Answers could include: Discussion on impacts on the environment through spray drift, pollution of air, water, soils, non-target species and also to host organisms such as health effects, reduced productivity, residues in products and development of resistance among pest organisms.

Question 7 (15 marks)

(a) Outcome assessed: H2.2

Criteria	Mark
Describes growth as increase in size of tissues and development as change in proportions of bone muscle and fat and describes how these change over time.	3 – 5
Identifies growth and development without linking to change in proportion over time.	1 – 2

Answers could include: Growth is an increase in size of an animal / tissue however the proportions of these in animals change over time as animals mature. Describes the differential development of bone muscle and fat. May relate this to increased productivity or achieving certain market specifications.

(b) Outcome assessed: H2.2

Criteria	Mark
Discusses the role of various ingredients and relates this to specific nutritional needs of an identified farm animal.	8 – 10
Discusses the role of various ingredients and relates this to nutritional needs of livestock in general.	4 – 7
Identifies some ingredients in a ration and their role in that ration.	1 – 3

Answers could include: Main components in a ration include protein, energy from fats and carbohydrates, vitamins, minerals, additives to modify digestion (rumen modifiers) veterinary medications (e.g. coccidiostats) appetite modifiers, NPN, and relate these to specific requirements of a named animal with recognition of change over time due to the animals age, production etc. This should specify role of these nutrients in meeting either a ruminant or monogastric digestion process.

Question 8 (15 marks)

(a) Outcome assessed: H2.1

Criteria	Mark
Describes role of native pastures as having variable productivity depending on species mix and management method.	3 – 5
Identifies native pastures as meeting needs of some classes of livestock.	1 – 2

Answers could include: Many native grasses and legumes play an important role in grazing systems. Some species have high productivity and palatability while others have much lower production. Grazing management may lead to degradation of pasture with inferior species becoming dominant. This may result in lower productivity and reduced ability to meet needs of livestock with high nutritional demand.

(b) Outcome assessed: H2.1

Criteria	Mark
Discusses manipulation of genotype by selection of superior cultivars, introduction of new species, and modification to the environment through irrigation, fertilizers, and pathogen control to raise productivity.	8 – 10
Describes a number of methods to manipulate genotype and environment to increase production.	4 – 7
Identifies ONE or more methods to manipulate genotype and environment to increase production.	1 – 3

Answers could include: Manipulate genotype using superior cultivars and varieties, introducing new species such as those used in improved pastures of crop production AND the techniques used to modify the environment such as irrigation, fertilizer selection and rate, pest and disease control, grazing or harvest management to enhance plant productivity.

Question 9 (15 marks)

(a) *Outcome assessed: HI.1*

Criteria	Mark
Describes tension between sustainability and short term profitability.	3 – 5
Identifies tensions.	1 – 2

Answers could include: Farmers have to be both environmentally and economically sustainable. Often short term profits may lead to a range of degradation and loss of production long term as well as significant environmental effects. Description of some examples is required for full marks.

(b) *Outcome assessed: HI.1*

Criteria	Mark
Discusses role of each party in conserving water and protecting waterways.	8 – 10
Describes role of each of the parties in conserving water and protecting waterways.	4 – 7
Identifies methods to conserve water or protect waterways.	1 – 3

Answers could include:

Conserving water: role of farmers through improved irrigation methods, changed cropping practices such as conservation or minimum tillage, communities through better water saving technologies and methods and changed attitudes to water use, governments through better management of water resources, licensing, development of storages, etc.

Protecting waterways: farmers conserving riverbanks, preventing runoff of nutrients or chemicals into waterways, communities through catching urban runoff, sewerage interception schemes, reduction in nutrient inflows, changed use of detergents, community based organisations, governments through water sharing agreements to maintain environmental flows, better management of reserves, legislation etc.

<i>Recommended Response Length (this is a guide only).</i>	
Value of the question (marks)	Recommended length of answer (number of lines)
1	2
2	4
3	7
4	10
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6	16
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**NSW INDEPENDENT TRIAL EXAMS – 2007
AGRICULTURE (PAPER 2) – HSC TRIAL
MARKING GUIDELINES**

Question 1 – Agribusiness (15 marks)

(a) *Outcome assessed: H3.4*

Criteria	Mark
Identifies at least THREE finance choices AND clearly states the essential qualities of each.	3
Identifies at least ONE choice AND clearly states its essential qualities.	2
Identifies ONE finance choice.	1

Answers could include: Borrowing, using off farm investments, diversification, futures trading, contracts, etc.

(b) *Outcome assessed: H3.4*

Criteria	Mark
Provides an explanation how at least THREE methods are used to analyse farm finance AND why they are used.	4
Provides an explanation how at least TWO methods are used to analyse farm finance AND why they are used.	3
Identifies how at least THREE methods are used to analyse farm finance AND /OR why they are used.	2
Identifies ONE method and states some advantages of it.	1

Answers could include: Whole farm budget, cash flow budget, balance sheet, profit and loss statement (etc) and methodology of each with particular purpose of each one.

(c) *Outcome assessed: H5.1*

Criteria	Marks
Describes the range of alternative selling methods AND makes a judgement on the most appropriate one for the named product.	7 – 8
Describes TWO alternative selling methods AND makes a judgement on the most appropriate one for the named product.	5 – 6
Identifies the range of alternative selling methods AND makes a suggestion on the most appropriate one for the named product.	3 – 4
Describes the range of alternative selling methods in general terms for the named product.	1 – 2

Answers could include: Auction, direct consignment, forward contract AuctionPlus etc for a product such as Beef Feeder steers and makes evaluation on which one best suits the circumstances of the particular production system.

Question 2 – Animal Management (15 marks)

(a) *Outcome assessed: H3.4*

Criteria	Mark
Identifies at least THREE management techniques AND clearly states the essential qualities of each.	3
Identifies at least ONE management technique AND clearly states its essential qualities.	2
Identifies ONE management choice.	1

Answers could include: Control of environmental factors such as day length, control of biological processes such as hormones, control of breeding techniques such as AI /ET.

(b) Outcome assessed: H3.4

Criteria	Mark
<ul style="list-style-type: none"> Provides an explanation of heritability. Identifies THREE types of breeding programs used on farms AND the impact of heritabilities on each. 	4
<ul style="list-style-type: none"> Provides an explanation of heritability. Identifies TWO types of breeding programs used on farms AND the impact of heritabilities on each. 	3
Identifies an example of heritability AND identifies a breeding programs in general terms used on farms AND the impact of heritabilities on ONE program.	2
Identifies ONE method and states some advantages of it.	1

Answers could include: Heritability is degree to which a trait or characteristic is passed from parents to offspring. Identifies breeding programs and how heritabilities impact on rate of improvement from each method.

(c) Outcome assessed: H5.1

Criteria	Marks
Describes the range of breeding systems used and makes a judgement on their impact on product quality.	7 – 8
Describes the range of breeding systems used and attempts to make a judgement on their impact on product quality.	5 – 6
Describes a breeding systems used and attempts to make a judgement on its impact on product quality.	3 – 4
Provides a few points about animal breeding systems.	1 – 2

Answers could include: Beef cattle trend to cross breeding and, Dairy line in breeding to increase fat content/protein content. Sheep cross breeding to improve carcase yield in prime lambs. Pig hybrids to improve carcase quality etc and judges why each one is best for that product.

Question 3 – Horticulture (15 marks)

(a) Outcome assessed: H3.4

Criteria	Mark
Identifies at least THREE ways managers manipulate a system AND clearly states the essential qualities of each in achieving sustainability.	3
Identifies at least ONE way AND clearly states its essential qualities.	2
Identifies ONE management method.	1

Answers could include: Reduced water use through recycling, use of water holding granules, integrated pest management.

(b) Outcome assessed: H3.4

Criteria	Mark
Describes at least THREE types of plant responses to the environment AND the ways these affect a production cycle.	4
Describes at least TWO types of plant responses to the environment AND the ways these affect a production cycle.	3
Identifies ONE plant response to the environment AND the way it affect a production cycle.	2
Describes in general terms plant responses to the environment.	1

Answers could include: ??????????

(c) Outcome assessed: H5.1

Criteria	Marks
<ul style="list-style-type: none"> Describes the changes in domestic markets for horticultural products AND relates to post harvest handling. Makes a judgement on the impact of these changes. 	7 – 8
<ul style="list-style-type: none"> Describes TWO changes in domestic markets for horticultural products AND relates to post harvest handling. Makes a judgement on the impact of these changes. 	5 – 6
<ul style="list-style-type: none"> Identifies TWO changes in domestic markets for horticultural products AND relates to post harvest handling. Describes the impact of these changes. 	3 – 4
Relates a change in domestic markets to a change in post harvest handling.	1 – 2

Answers could include: Trend to supermarkets resulted in need for post harvest refrigeration of many products and requirement to supply year round not just when in season, pre-pack of fruit vegetables leading to higher on farm processing costs, QA requirements by supermarkets required better supply chain logistics. Often results in increased costs to producer and need to increase in size to gain economies of scale.

Question 4 – Innovation and Diversification (15 marks)

(a) Outcome assessed: H3.4

Criteria	Mark
Identifies at least TWO ways knowledge of biology influences management of alternative production systems AND clearly states the essential qualities of each.	3
Identifies at least ONE way AND clearly states its essential qualities.	2
Identifies ONE method.	1

Answers could include: Plant systems can be manipulated due to understanding of biology of crop resulting in cropping through a range of production systems e.g. lettuce in rows in soil, hydroponics.

(b) Outcome assessed: H3.4

Criteria	Mark
Describes at least THREE ways an innovation may be marketed AND the reason why these may be successful.	4
Describes at least TWO ways an innovation may be marketed AND the reason why these may be successful.	3
Identifies at least THREE ways an innovation may be marketed OR the reason why one of these may be successful.	2
Describes in general terms marketing methods.	1

Answers could include: Direct marketing, linking with other products, trial periods etc and link to a named innovation.

(c) Outcome assessed: H5.1

Criteria	Marks
Describes the impact of at least THREE social barriers on innovation AND makes a judgement on the impact of these barriers.	7 – 8
Describes the impact of at least TWO social barriers on innovation AND makes a judgement on the impact of these barriers.	5 – 6
Describes the impact of a social barrier on innovation AND makes a judgement on the impact of it.	3 – 4
Describes social barriers in general terms.	1 – 2

Answers could include: Depends on agricultural system. Answer could relate to religious, ethnic or socio-economic prejudices and should evaluate the impact of each on innovation.

Question 5 – Plant Management (15 marks)*(a) Outcome assessed: H3.4*

Criteria	Mark
Identifies at least THREE ways hormones are used in plant production AND clearly states the essential qualities of each.	3
Identifies at least ONE way hormones are used AND clearly states its essential qualities.	2
Identifies ONE way hormones are used.	1

Answers could include: Control growth e.g. fruit thinning, use as herbicides, and in propagation.*(b) Outcome assessed: H3.4*

Criteria	Mark
Describes at least THREE ways water moves through plants AND the principles upon which they work.	4
Describes at least TWO ways water moves through plants AND the principles upon which they work.	3
Identifies ONE way water moves through plants AND the principles upon which it works.	2
Describes in general terms the movement from soil to leaf.	1

Answers could include: Osmotic flow, mass flow, capillary action, transpirational pull and description of each process from soil to root hair to xylem to leaf to stomate to air.*(c) Outcome assessed: H5.1*

Criteria	Marks
Describes the impact of at least THREE practices AND makes a judgement on the impact of these on nutrient cycling AND fertility.	7 – 8
Describes the impact of at least TWO practices AND makes a judgement on the impact of these on nutrient cycling AND fertility.	5 – 6
Describes the impact of a practice AND makes a judgement on the impact of it on nutrient cycling AND fertility.	3 – 4
In general terms describes the impact of management on nutrient cycling AND fertility.	1 – 2

Answers could include: Depends on plant or cropping system chosen.**Question 6 – Sustainable Land and Resource Management (15 marks)***(a) Outcome assessed: H3.4*

Criteria	Mark
Identifies at least TWO ways land capability assessment assists in sustainability AND clearly states the essential qualities of each.	3
Identifies at least ONE impact AND clearly states its essential qualities.	2
Identifies ONE way land capability assessment is used.	1

Answers could include: Class identifies acceptable land use and thus affects runoff, erosion, cropping or grazing potential.*(b) Outcome assessed: H3.4*

Criteria	Mark
Describes at least THREE causes of soil structural decline AND defines what structural decline is.	4
Describes at least TWO causes of soil structural decline AND defines what structural decline is.	3
Identifies at least TWO causes of soil structural decline AND defines what structural decline is.	2
Identifies structural decline and relates it to a land use practice.	1

Answers could include: Reduced organic matter through overgrazing, stubble burning, poor cultivation practices, sodification of soils leading to poor structure, compaction, etc; AND defining soil structure decline as breakdown in structure of soil particle leading to uniform particle size distribution.*Question 6 continues on the next page*

(c) Outcome assessed: H5.1

Criteria	Marks
Describes ONE procedure AND Makes a judgement on the effectiveness of this on physical AND biological processes in the soil.	7 – 8
Describes ONE procedure AND Makes a judgement on the effectiveness of this on physical OR biological processes in the soil.	5 – 6
Describes ONE procedure AND describes the effectiveness of this on physical OR biological processes in the soil.	3 – 4
In general terms discusses methods to reduce soil degradation.	1 – 2

Answers could include: Depends on type of degradation and procedure chosen.