



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2013**

**AGRICULTURAL SCIENCES P2**

**MARKS: 150**

**TIME: 2½ hours**



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This question paper consists of 14 pages.

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions from BOTH SECTIONS A and B.
2. SECTION A (QUESTION 1) must be answered on the attached ANSWER SHEET.
3. Place your ANSWER SHEET for SECTION A (QUESTION 1) inside your ANSWER BOOK.
4. SECTION B (QUESTIONS 2 to 4) must be answered in the ANSWER BOOK.
5. Start each question from SECTION B on a NEW page.
6. Read the questions carefully and make sure you answer what is asked.
7. Number the answers correctly according to the numbering system used in this question paper.
8. DO NOT SPLIT the answers to the questions.
9. Write neatly and legibly.

**SECTION A****QUESTION 1**

- 1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and make a cross (X) over the appropriate letter in the block (A–D) next to the question number (1.1.1–1.1.10) on the attached ANSWER SHEET. NO MARKS WILL BE ALLOCATED IF MORE THAN ONE CROSS (X) APPEARS FOR AN ANSWER.

Example:

A	B	<del>C</del>	D
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- 1.1.1 Which ONE of the following is NOT a matter to be considered in marketing planning?

- A When to sell
- B Mobility to get the product to the best market on time
- C The market that would be the best to deliver the product to
- D Cash flow to ensure enough money for routine processes

- 1.1.2 A characteristic in a population of yellow flowering rose plants suddenly reappeared in a floriculturist's garden. The best genetic description for this would be ...

- A heredity.
- B atavism.
- C crossing over.
- D prepotency.

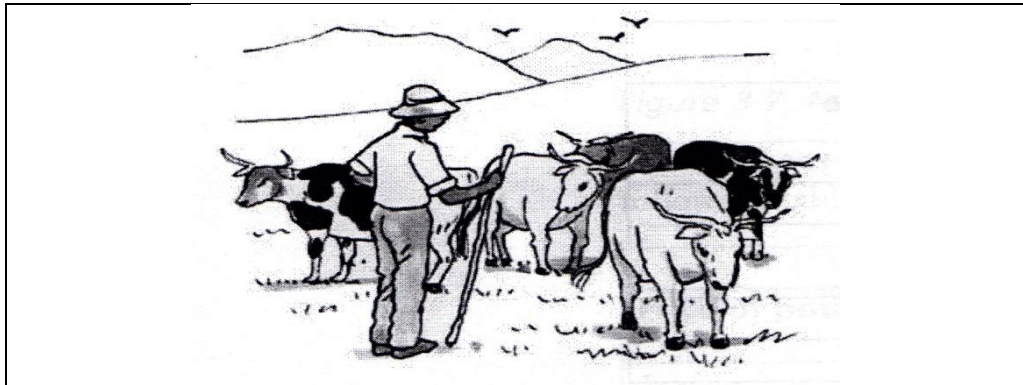
- 1.1.3 You came across the following template in a commercial farm's office.

Commodity	Jan	Feb	March	April	May	June	July	Aug	Sept
Milk									
Maize									
Onions									
Lettuce									
Peas									

Choose the most appropriate title for the template.

- A Production process plan
- B Farm workers plan
- C Attendance register of farm workers
- D Scale of preference plan

1.1.4 What type of capital does the cattle in the picture below represent?



- A Fixed capital
- B Working capital
- C Moveable capital
- D None of the above

1.1.5 The genetic characteristics of an organism are controlled by unit factors that occur in pairs. Mendel's unit factors in modern genetics are called ...

- A genes.
- B alleles.
- C gametes.
- D polygenes.

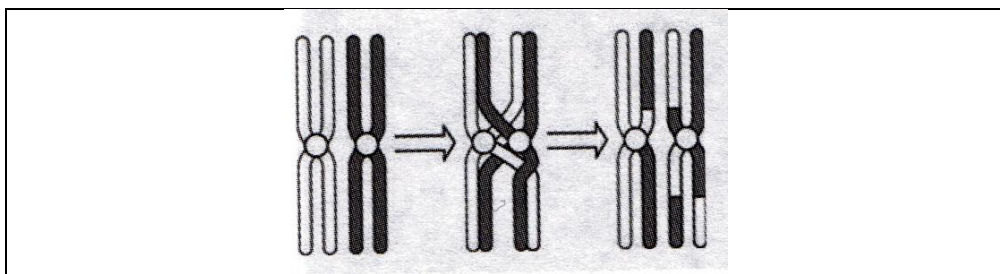
1.1.6 A Grade 12 learner was given a computer programme that uses statistics to analyse genetic data of cattle in order to estimate their true genetics and therefore their breeding value. This programme could be a ...

- A pedigree selection programme.
- B biometrics programme.
- C pure line programme.
- D lethal programme.

1.1.7 The Sustainable Utilisation of Agricultural Resources Bill (2003) addresses ...

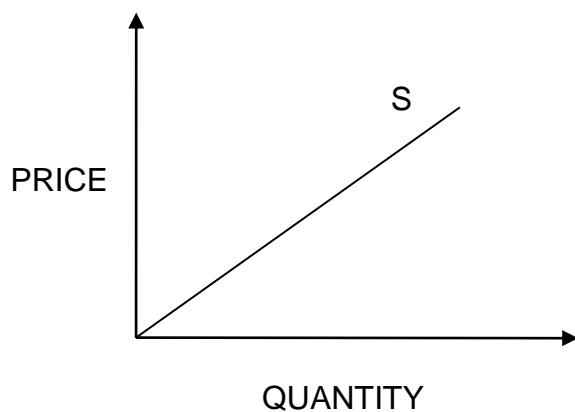
- A ploughing of virgin land.
- B fire safety issues.
- C deterioration of natural resources and sustainable management of resources on farms.
- D authorisation to establish timber plantations and pastures.

1.1.8 The process below indicate ...



- A cross pollination.
- B agro-bacterium tumefaciens.
- C crossing over.
- D recombinant genes.

1.1.9 The price of a product is determined by the interaction of Demand and Supply. The letter **S** indicates ...



- A demand curve.
- B equilibrium price.
- C supply curve.
- D surplus curve.

1.1.10 A traditional way of identifying and picking an animal for breeding from the field according to the way it performs.

- A Inbreeding
- B Family selection
- C Pedigree selection
- D Mass selection

(10 x 2) (20)

- 1.2 In the table below a statement with TWO possible answers are given. Decide whether the statement in COLUMN B relates to A only, B only, both A and B or NONE of the answers in COLUMN A and make a cross (X) in the block (A–D) next to the question number (1.2.1–1.2.5) on the attached ANSWER SHEET.

**Example:**

COLUMN A		COLUMN A
A:	radio	Example/s of advertisement
B:	television	

**Answer:**

The statement refers to:			
Only A	Only B	A and B	None
A	B	<del>C</del>	D

COLUMN A			COLUMN B
1.2.1	A:	58XY chromosomes	Somatic cells of a bull
	B:	58XX chromosomes	
1.2.2	A:	fish to be processed	Primary goods
	B:	timber from the forest	
1.2.3	A:	self-pollinated crops	Heterozygous
	B:	cross-pollinated crops	
1.2.4	A:	external causes of variation	Light sensitivity, diseases, climate, feeding
	B:	internal causes of variation	
1.2.5	A:	production conversion	Producer → wholesaler → retailer → consumer
	B:	feedback loop	

(5 x 2) (10)

1.3 Give ONE TERM/WORD/PHRASE for each of the following descriptions. Write only the term next to the question number (1.3.1–1.3.5) on the attached ANSWER SHEET.

- 1.3.1 The relationship between a change in price and the change in demand for the produce
- 1.3.2 Amount of money that a bank or financing company charges for lending capital
- 1.3.3 A simple tool or table used in order to determine the probability of an offspring expressing a particular genotype
- 1.3.4 Organism whose DNA has been inserted with genes from another organism
- 1.3.5 Type of cell division that gives rise to four haploid daughter cells (gametes) from one diploid parent cell

(5 x 2) (10)

1.4 Change the UNDERLINED WORDS in the following statements to make them TRUE. Write only the appropriate word(s) next to the question number (1.4.1–1.4.5) on the attached ANSWER SHEET.

- 1.4.1 Marketing strategies are driven by the needs of producers.
- 1.4.2 Alleles is a group of individuals that look similar and can breed with each other to produce fertile offspring.
- 1.4.3 Prepotency occurs when the structure of a gene changes.
- 1.4.4 The programme that seeks to improve the security of tenure of people occupying rural and peri-urban land is land restitution.
- 1.4.5 The barter system of marketing is managed and controlled by its directors who are elected by the members.

(5 x 1) (5)

**TOTAL SECTION A: 45**

**SECTION B**

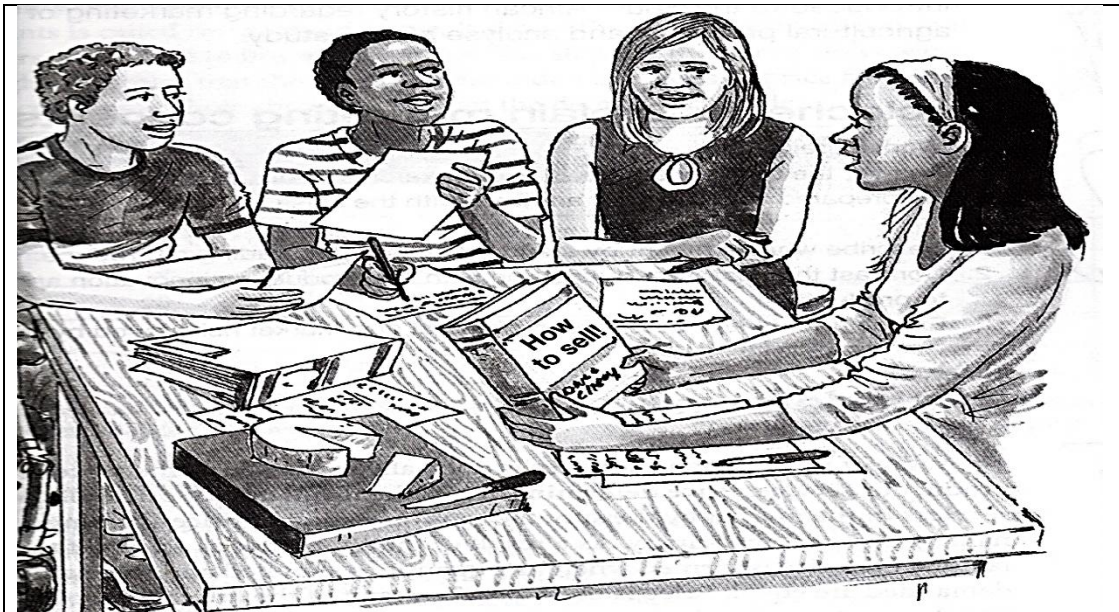
Start this QUESTION on a new page.

**QUESTION 2: AGRICULTURAL MANAGEMENT**

- 2.1 A young agronomist was employed by traditional farmers to manage their farming project. The agronomist had a thorough understanding of the taxation system of South Africa. He/she knew when to borrow funds and when to invest. He/she communicated his/her vision to all the farmers and he/she was always prepared to understand what the farmers had to tell him/her.

- 2.1.1 Provide TWO managerial skills that the agronomist has displayed from the scenario. (2)
- 2.1.2 Suggest a suitable role of the agronomist on the farm. (1)
- 2.1.3 Indicate THREE management techniques he/she could use to control or eliminate the total failure of the farm enterprise. (3)

- 2.2 A group of learners cultivated cotton for sale. After harvesting and grading, they met to discuss the handling processes that the raw cotton pass through.



- 2.2.1 Predict FOUR aspects that could be at the centre of their discussion. (4)
- 2.2.2 Suggest THREE ways by which the government can create a supportive environment for young agricultural farmers. (3)
- 2.2.3 Distinguish between agricultural supply co-operatives and agricultural marketing co-operatives. (4)
- 2.2.4 State THREE limitations traditional farm managers could face in crop production in South Africa. (3)

- 2.3 The price of a product is a major determinant in the quantity of goods produced. Below is a numerical tabulation showing the quantity of potatoes supplied at selected prices.

PRICE	QUANTITY OF POTATOES SUPPLIED
R1	12
R2	22
R3	42
R4	52
R5	65

- 2.3.1 Give an appropriate economic term for the underlined words. (2)
- 2.3.2 Design a straight line graph from the data in QUESTION 2.3. (4)
- 2.3.3 Describe the trend of production evident from the graph. (2)
- 2.3.4 Indicate the price at which the suppliers are ready to offer most of their products in the market. (1)
- 2.4 The role of legislation in relation to agricultural marketing can be simplified into three main functions.
- 2.4.1 List any TWO of the functions of marketing legislations in South Africa and give ONE example in each case. (4)
- 2.4.2 Briefly explain the term "*marketing channel*". (2)

**[35]**

### QUESTION 3: PRODUCTION FACTORS AND MANAGEMENT

Start this QUESTION on a new page.

- 3.1 There is a range of legislation that controls and directs both the management and workers in South Africa. The image below illustrates the action of labourers.



- 3.1.1 Describe the behaviour of the farm workers in the picture in QUESTION 3.1. (1)
- 3.1.2 Indicate the labour legislation that allows the workers' behaviour in the image in QUESTION 3.1.1. (1)
- 3.1.3 Identify FOUR management principles that would assist suppliers to increase their output in a competitive market. (4)
- 3.1.4 List TWO basic elements in decision making. (2)
- 3.2 Fair access to agricultural land includes land redistribution and land restitution programmes. Land redistribution addresses injustices of the past by reforming access, tenure and ownership. The success of such a land reform policy requires some action by the government.
- 3.2.1 Summarise THREE actions that the government can take to make the land reform policy a success. (3)
- 3.2.2 State TWO ways of obtaining fair access to agricultural land from the scenario in QUESTION 3.2. (2)
- 3.2.3 Differentiate between private tenure and communal tenure of land ownership. (2)

- 3.3 Identify THREE reasons to justify the campaign against the spread of HIV and Aids on agricultural enterprises. (3)
- 3.4 A farm manager drew a plan of his/her future income and expenses of his/her business. The plan included the following:

Wages of workers	R28 000,00
Sale of tomatoes	R36 000,00
Transport of fertiliser	R 1 750,00
Interest from creditors	R 3 500,00

- 3.4.1 Give a suitable description for the underlined words in the scenario in QUESTION 3.4. (1)
- 3.4.2 Draw up an income and expenditure plan using the information in QUESTION 3.4. (6)
- 3.4.3 Calculate the farmer's expected profit or loss in QUESTION 3.4. (2)
- 3.5 Examine the picture below and answer the questions based on it.



- 3.5.1 Identify the marketing system illustrated in the picture. (1)
- 3.5.2 Summarise FOUR advantages of the marketing system identified in QUESTION 3.5.1. (4)
- 3.5.3 List THREE factors that determine demand. (3)

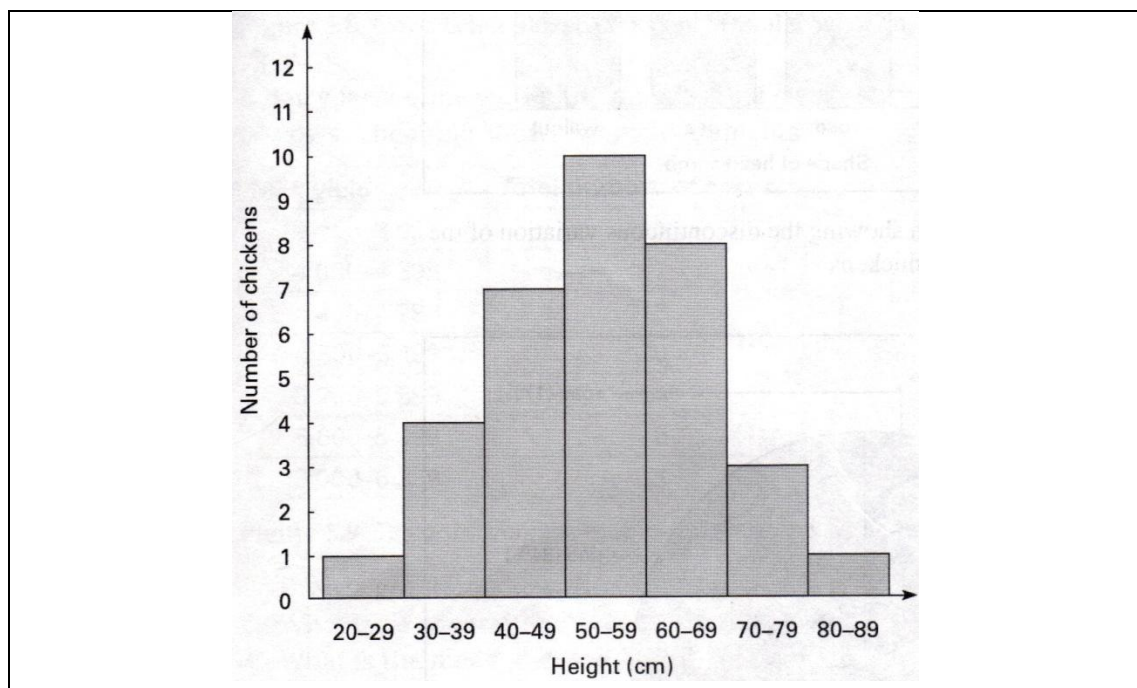
**QUESTION 4: BASIC AGRICULTURAL GENETICS**

Start this QUESTION on a new page.

- 4.1 Genetically modified foods have come to your local supermarket, even though most Americans don't want them and many believe they're dangerous. A CBS poll found that 53 percent of Americans wouldn't buy food they knew had been genetically modified.

[Source: [www.newsmaxhealth.com](http://www.newsmaxhealth.com)]

- 4.1.1 Suggest THREE reasons to justify why 53 percent of Americans would not buy genetically modified food. (3)
- 4.1.2 Explain how you would use a micro-injection to genetically modify a plant. (3)
- 4.1.3 List FOUR traditional methods of selection of animals in South Africa. (4)
- 4.2 The graph below shows variation in the height of broiler chickens on a farm.



- 4.2.1 Deduce the type of variation represented by the graph. (1)
- 4.2.2 Indicate the number of chicken with the height range of 60–69. (1)
- 4.2.3 List THREE genetic causes that could bring about variations in the height of the broiler chickens. (3)
- 4.2.4 Indicate the variables represented by **X** and **Y** in the graph. (2)

4.3 A scientist crossed two ducks. The male duck had the BB (black) genes and the female had bb (white) genes.

4.3.1 Draw a Punnet square to show the crossings. (4)

4.3.2 Define the following terminologies:

(a) Genotype (1)

(b) Phenotype (1)

4.3.3 From the list of the characters below, indicate the character that can be considered as qualitative.

- Eye colour of an offspring
- Height of an offspring
- Weight of an offspring (1)

4.4 Growth is an increase in size and complexity of a plant or animal. It transforms a seedling or an infant into a mature adult capable of reproduction. Aging on the other hand is the gradual deterioration of an organism after reaching maturity.

4.4.1 Determine THREE influences of aging on animal production. (3)

4.4.2 Identify THREE internal factors that can influence the growth potential of animals. (3)

4.5 Hormones are substances produced by the body to regulate and control the changes in the body. Various hormones are involved in the regulation of growth in both plants and animals. Below is a list of hormones regulating growth in plants and animals.

4.5.1 Indicate THREE hormones from the list below that regulate growth in plants.

- Androgens
- Gibberellins
- Auxins
- Somatotrophin
- Thyroxin
- Cytokinins (3)

4.5.2 Mention the gland that is responsible for the secretion of *somatotrophin*. (1)

4.5.3 State the male sex hormone produced in the testis of male animals. (1)

[35]

**TOTAL SECTION B: 105**  
**GRAND TOTAL: 150**

**ANSWER SHEET****AGRICULTURAL SCIENCES P2****NAME AND SURNAME:** \_\_\_\_\_**SECTION A****QUESTION 1.1**

1.1.1	A	B	C	D
1.1.2	A	B	C	D
1.1.3	A	B	C	D
1.1.4	A	B	C	D
1.1.5	A	B	C	D
1.1.6	A	B	C	D
1.1.7	A	B	C	D
1.1.8	A	B	C	D
1.1.9	A	B	C	D
1.1.10	A	B	C	D

(10 x 2) (20)

**QUESTION 1.2**

1.2.1 \_\_\_\_\_

1.2.2 \_\_\_\_\_

1.2.3 \_\_\_\_\_

1.2.4 \_\_\_\_\_

1.2.5 \_\_\_\_\_

(5 x 2) (10)

**QUESTION 1.3**

1.3.1 \_\_\_\_\_

1.3.2 \_\_\_\_\_

1.3.3 \_\_\_\_\_

1.3.4 \_\_\_\_\_

1.3.5 \_\_\_\_\_

(5 x 2) (10)

**QUESTION 1.4**

1.4.1 \_\_\_\_\_

1.4.2 \_\_\_\_\_

1.4.3 \_\_\_\_\_

1.4.4 \_\_\_\_\_

1.4.5 \_\_\_\_\_

(5 x 1) (5)

