



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

AGRICULTURAL SCIENCES P2

SEPTEMBER 2023

MARKS: 150

TIME: 2½



EAGRSP2

This question paper consists of 16 pages

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections; namely SECTION A and SECTION B.
2. Answer ALL the questions in the ANSWER BOOK.
3. Start EACH question on a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. You may use a non-programmable calculator.
6. Show ALL calculations, including formulae, where applicable.
7. Write neatly and legibly.

SECTION A
QUESTION 1

1.1 Various options are provided as possible answers to the following questions.

Choose the correct and write only the letter (A – D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 C.

1.1.1 The combination of product, pricing, placement and promotion is called ...

- A Competition
- B marketing mix
- C market pricing
- D cost-pricing

1.1.2 The various quantities of a product that are produced or offered by the sellers at varying prices.

- A Supply
- B Price
- C Demand
- D Price formation

1.1.3 The following are the advantages of processing raw agricultural products.

- (i) Increases the value of the product.
- (ii) A way of overcoming over-supply of products.
- (iii) Focuses on the needs of seller
- (iv) Provides job opportunities

Choose the CORRECT combination

- A (i), (ii) and (iii)
- B (i), (iii) and (iv)
- C (ii), (iii) and (iv)
- D (i), (ii) and (iv)

- 1.1.4 A factor that does NOT cause a shift in demand.
- A Changes in the prices of related goods
 - B Consumer preferences
 - C Consumer income
 - D Changes in production costs
- 1.1.5 The system in which buying or selling is manipulated in some way.
- A Cooperative marketing
 - B Marketing chain
 - C Controlled marketing system
 - D Free-marketing system
- 1.1.6 The addition of successive units of one production factor with no proportional increase in yield.
- A Law of demand
 - B Law of selling return
 - C Law of diminishing return
 - D Law of demand and supply
- 1.1.7 Combination of all farm enterprises of the farm business.
- A Whole farm budget
 - B Partial budget
 - C Cash flow budget
 - D Enterprise budget
- 1.1.8 The strategies that allow the farmer to share the risk with other parties.
- A Risk management
 - B Risk-sharing
 - C Market risks
 - D Financial risks

1.1.9 The following statements are about Mendel's observations on the law of Segregation.

- (i) There are factors inside an organism that control characteristics.
- (ii) Each parent has two factors in each cell that controls a characteristic.
- (iii) These factors are transferred from parents to offspring.
- (iv) The characteristics are recessive.

Choose the CORRECT combination

- A (i), (ii) and (iii)
- B (i), (ii) and (iv)
- C (i), (iii) and (iv)
- D (ii), (iii) and (iv)

1.1.10 ... indicates an extra copy of chromosome that result in mutation.

- A Mutagen
- B Aneuploidy
- C Polyploidy
- D Mutation

(10 x 2) (20)

- 1.2 Choose a word/term in COLUMN B that matches a description in COLUMN A. Write only the letter A-J next to the question numbers (1.2.1 to 1.2.5) in the ANSWER BOOK, e.g 1.2.6.

COLUMN A	COLUMN B
1.2.1 The process of coordinating the movement of goods from the producer to the consumer.	A Solvency
1.2.2 The effective combination and co-ordination of human resource, physical and financial resources to maximise profit.	B Heredity
1.2.3 When a business can meet its debts, either from its cash flow or selling its assets.	C Distribution
1.2.4 Costs that do not vary with the level of production.	D Management
1.2.5 The passing on of characteristics from one generation to the next.	E Variable costs
	F Genetics
	G Insolvency
	H Logistics
	I Fixed Costs
	J Planning
	(5 x 2) (11)

- 1.3 Give ONE word/term for each of the following descriptions. Write only the word/term next to question numbers (1.3.1 to 1.3.5) in the ANSWER BOOK.

- 1.3.1 The relationship between change in price and change in demand or supply.
- 1.3.2 Too much capital invested in the farming enterprise, thus causing the interest liability per unit to increase.
- 1.3.3 The mating between a female horse and a male donkey.
- 1.3.4 A mechanism of inheritance in which two dominant alleles are both expressed fully in the phenotype.
- 1.3.5 The degree to which a characteristic is determined by genetic factors as opposed to environmental factors.

(5 x 2) (10)

1.4 Change the UNDERLINED WORD(S) in EACH of the following statements to make them TRUE. Write only the answer next to the question numbers (1.4.1 to 1.4.5) in the ANSWER BOOK.

- 1.4.1 Market equilibrium is when the price of a product tends to settle at the where demand is equal to supply.
- 1.4.2 A cash flow statement is a summary of the assets and liability of a business.
- 1.4.3 DNA that is altered by receiving genes from another organism is called transgenic DNA.
- 1.4.4 Mass selection involves selecting animals based on the quality of their progeny or offspring.
- 1.4.5 Milk yield in dairy cows is controlled by many alleles.

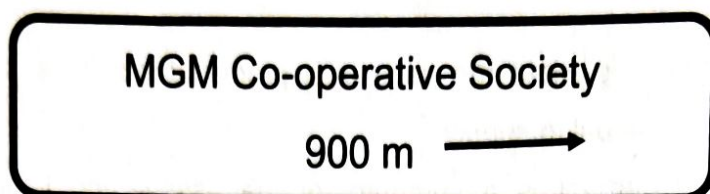
(5 x 1) (5)

TOTAL SECTION A: 45

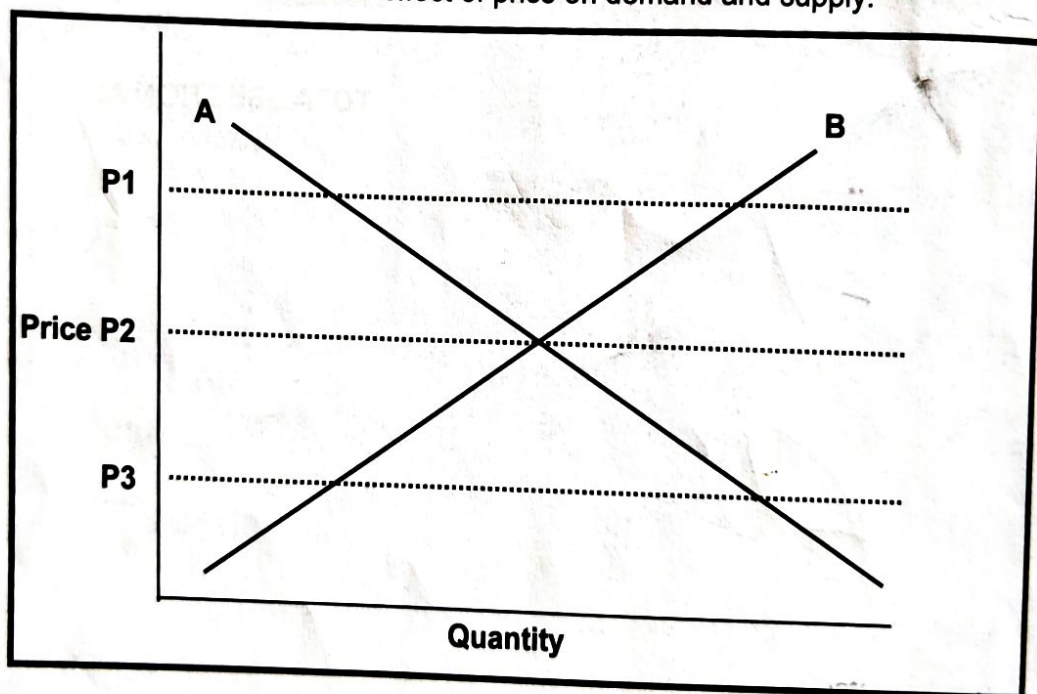
SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING**

Start this question on a NEW page.

2.1 The illustration below indicate a marketing system used in the agricultural sector.



- 2.1.1 Identify the type of marketing system illustrated above.
- 2.1.2 Name TWO types of marketing illustrated above.
- 2.1.3 Differentiate between marketing and selling.
- 2.1.4 State TWO problems that can hamper the marketing chain of agricultural products.
- 2.2 The graph below shows the effect of price on demand and supply.



- 2.2.1 Identify the letter representing the demand curve. (1)
- 2.2.2 Explain what would happen on the market if the produce is sold at price P1 (2) and P3 respectively.
- 2.2.3 Suggest TWO strategies farmers can employ to deal with the situation of P1 in QUESTION 2.2.2 above. (2)
- 2.2.4 State ONE factor that would influence the shape of Curve B. (1)
- 2.2.5 Give ONE factor that can cause a shift in demand. (1)

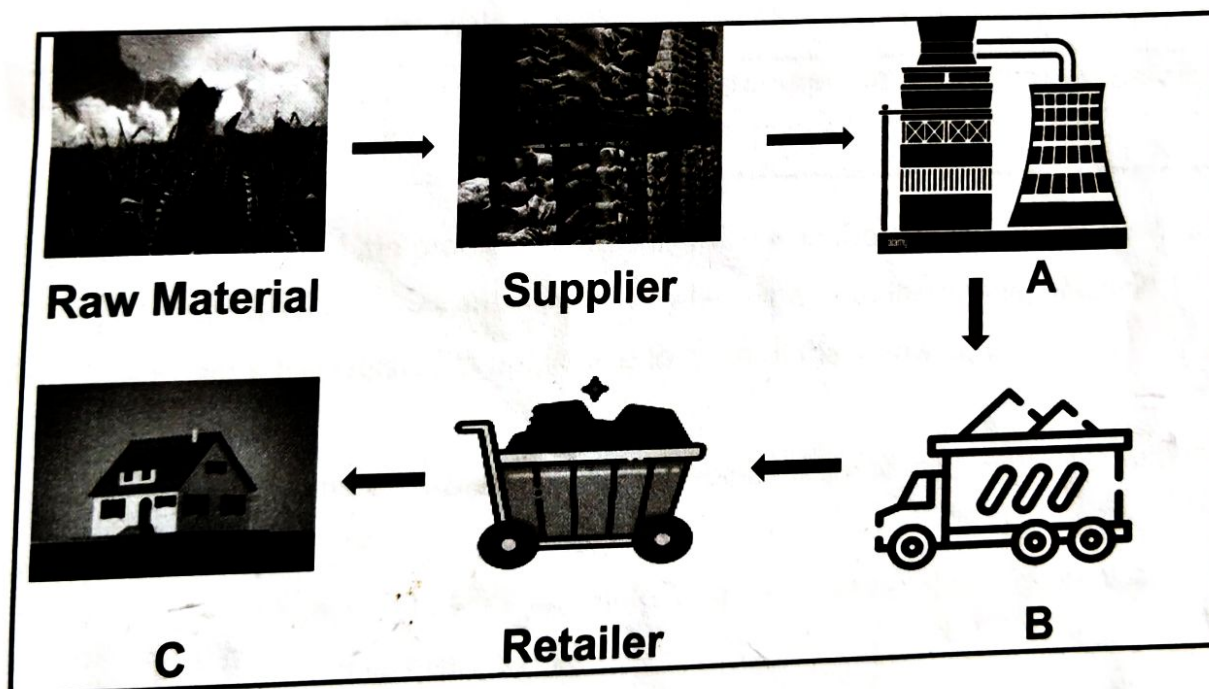
2.3 Below are the different types of buyers on agricultural markets in South Africa.

Consumers, Food processing companies; Retailers;
Brokers; Exporters and importers

Identify the type of buyers for each of the following:

- 2.3.1 These agents work for commission on behalf of other participants. (1)
- 2.3.2 Individuals or companies that buy fresh and processed foods for final use. (1)
- 2.3.3 Enterprises that use agricultural commodities as raw materials. (1)
- 2.3.4 Companies that buy and sell agricultural products in foreign markets. (1)
- 2.3.5 Intermediaries, which include supermarkets, who divide up large shipments of produce and sell to end users. (1)

2.4 The diagram below illustrates the agricultural activity on the market.



2.4.1 Identify the marketing process illustrated on the diagram above. (1)

2.4.2 Mention stages **A**, **B** and **C** of the marketing process identified in (3)

QUESTION 2.4.1.

2.4.3 List TWO requirements of a container for the packaging of fresh produce. (2)

2.4.4 State TWO methods through which the retailer can set the price of the goods. (2)

2.5

A student has identified an agri-business opportunity in the community. Being energetic and enthusiastic about entrepreneurship, the student decided to grab the opportunity.

- 2.5.1 Identify the TWO phases of the entrepreneurial process from the scenario above. (2)
- 2.5.2 State TWO ways in which a business plan will be helpful in the entrepreneurship process. (2)
- 2.5.3 Indicate TWO entrepreneurial qualities that would make the student succeed in the business. (2)

2.6

Define the concept SWOT analysis. (2)

[35]

QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

3.1

A farmer experienced a decline of maize production from 8tons to 6tons for five years. Even though the same amount of fertilizers was applied, profit per hectare declined annually. The farmer approached an advisor to assist with identifying ways to increase the output per hectare.

- 3.1.1 Identify the characteristic depicted in the scenario above. (1)
- 3.1.2 Give TWO functions of land in the scenario above. (2)
- 3.1.3 Indicate TWO ways the farmer could increase the output of the land. (2)
- 3.1.4 State ONE economic characteristic of land in the scenario above. (1)
- 3.1.5 Explain the characteristic identified in QUESTION 3.1.1 that is associated with fertilisers and yield. (2)

3.2

From 2020 millions of people including farm labourers in agriculture died due to Covid 19 and other related diseases.

- 3.2.1 Identify the main problem of labour which was the result of the pandemic. (1)
- 3.2.2 State ONE problem encountered by labour due to the impact of Covid 19 (1)
- 3.2.3 Provide the legislation applicable to each of the following situations.
 - (a) Training of new work force to replace the lost labourers because of Covid 19. (1)
 - (b) Erection of notices and enforcing the wearing of masks, sanitising and social distancing. (1)
 - (c) Compensation of workers who contracted the disease whilst performing their duties. (1)
 - (d) Number of days or rotating with other workers to be spent at work to reduce transmission of Covid 19. (1)

3.3 The pictures below illustrate the types of capital invested in a farm.

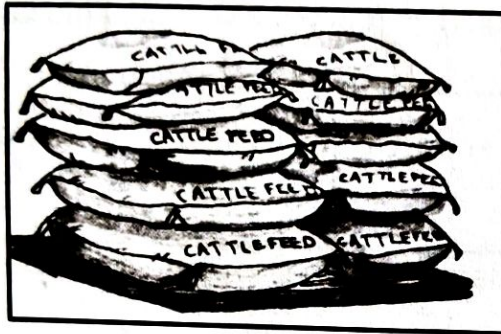
PICTURE A



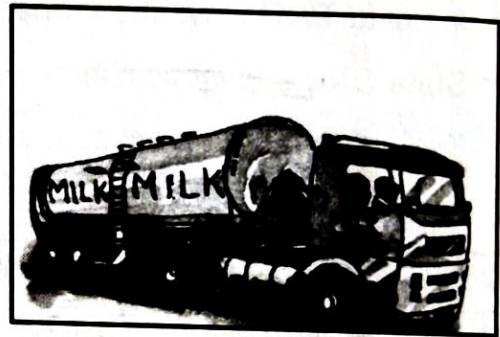
PICTURE B



PICTURE C



PICTURE D



- 3.3.1 Identify the type capital illustrated in pictures A, C and D.
- 3.3.2 List TWO problems associated with capital.
- 3.3.3 Give ONE way of creating a capital.

3.4

A farmer wanted to determine whether it will be more profitable to move from manual weeding to use herbicides. He made the decision with the aid of the budget below.

Added income due to change	Added costs due to change
Nil	Sprayers R4000 Purchase of herbicides R3000 Protective clothing R2000
Reduced costs due to change: Weeding labour R12000 Depreciation of hoes R3000	
Subtotal A	Subtotal B
Net change	

- 3.4.1 Identify the farm budget depicted above. (1)
- 3.4.2 Give a reason for the answer in QUESTION 3.4.1. (2)
- 3.4.3 Calculate the net change of this farm business. (3)
- 3.4.4 From the calculation above, deduce the necessary action for the farmer. Support the answer. (2)

- 3.5 Good management is essential in the running of the farming business. (2)
- 3.5.1 Define the term farm management. (2)
- 3.5.2 Indicate TWO main managerial principles. (2)
- 3.5.3 Name TWO external forces that may affect the farming business. (2)
- 3.5.4 Give the term used to identify the potential risks and finding ways of minimising them. (1)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

Start this question on a NEW page.

- 4.1 The illustration below is a punnet square diagram showing the F₂ generation of a particular genetic cross between purebred sugarcane with low-fibre and poor crystallization and purebred sugarcane with high-fibre and good crystallization.

Key: d = low-fibre

D = high fibre

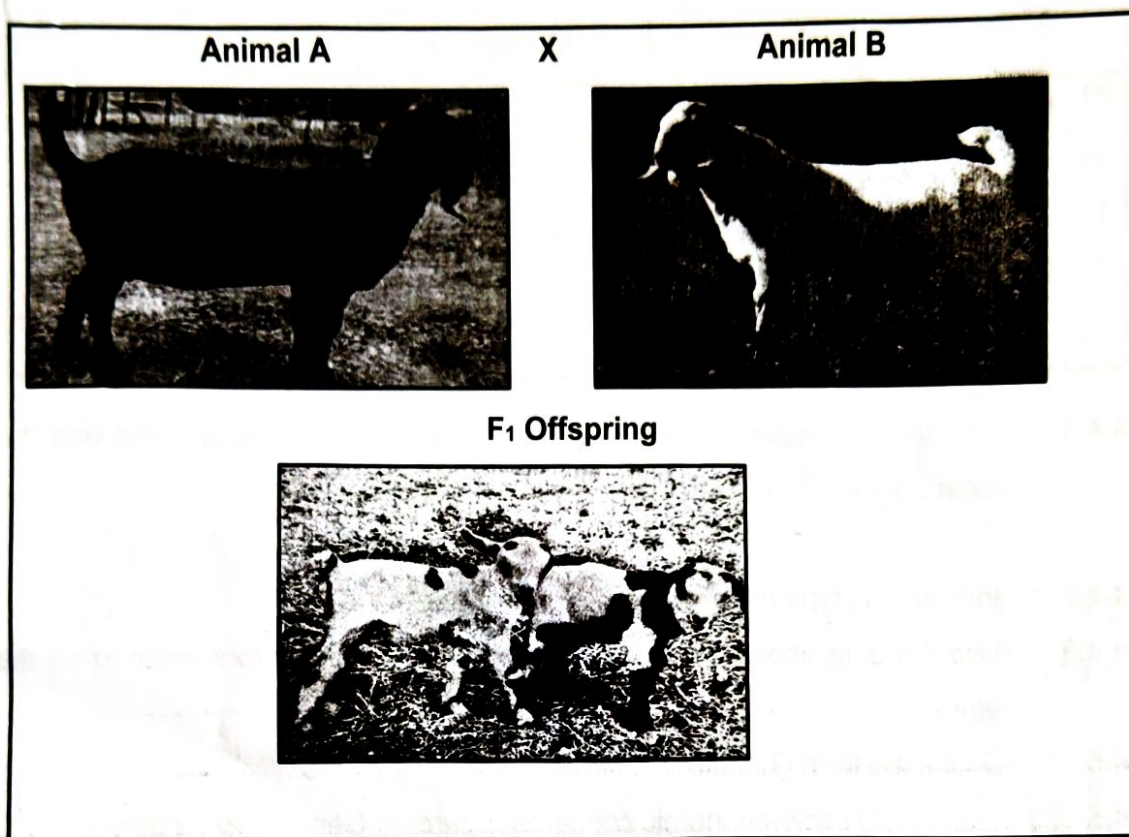
b = poor crystallization

B = good crystallization

Gametes	DB	Db	dB	db
DB	DDBB	DDBb	DdBB	DDBb
Db	DDBb	DDbb	DdBb	Ddbb
dB	DdBB	DdBb	ddBB	ddBb
db	DdBb	Ddbb	ddBb	ddbb

- 4.1.1 Mention the type of cross illustrated by the punnet above.
- 4.1.2 Determine the ratio of high-fibre and poor crystallization to the rest of the possible phenotypes in the punnet square above.
- 4.1.3 Calculate the percentage of the low-fibre and poor crystallization in the phenotypes shown in the punnet square above.

4.2 The pictures below illustrate two different breeds of farm animals and their offspring.



4.2

- 4.2.1 Name the breeding system that exist between animal **A** and animal **B**. (1)
- 4.2.2 Give a reason for the answer in QUESTION 4.2.1. (1)
- 4.2.3 List TWO advantages of the breeding system in QUESTION 4.2.1. (2)
- 4.2.4 Mention the pattern of inheritance that led to the phenotype of the offspring (1) above.
- 4.2.5 Draw a punnet square to illustrate the F₁ generation when a purebred black (B) ram is mated with a white (W) purebred ewe. (4)

4.3

Farmers use selection and different breeding methods in their farming activities.

- 4.3.1 Define the concept selection. (2)
- 4.3.2 Name the type of selection that exist without interference. (1)
- 4.3.3 Name TWO characteristics farmers will select in animal production. (2)
- 4.3.4 Indicate how the farmer can improve each of the following through selection: (1)
- (a) The genetic composition of farm animals. (1)
- (b) Environmental conditions. (1)

4.4 The table below shows the weaning weights of adult animals and heifers on a farm.

WEANING WEIGHT RANGE (kg)	NUMBER OF ADULT ANIMALS	NUMBER OF HEIFERS
81 – 90	14	16
91 – 100	17	20
101 – 110	25	27
111 – 120	19	22
121 – 130	12	14

4.4.1 Use the information above and draw a combined bar graph showing the weaning weights of both adult animals and heifers. (6)

4.4.2 Indicate the type of variation depicted above. (1)

4.4.3 Use the data above to find the average number of heifers weaned on the farm. (2)

4.5 4.5.1 Define the term Genetic Modification. (2)

4.5.2 State TWO socio-economic concerns regarding Genetically Modified Organisms. (2)

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TOTAL SECTION B: 105

GRAND TOTAL: 150