



Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2024

AGRICULTURAL SCIENCES P2

MARKS: 150

TIME: 2½ hours

This question paper consists of 14 pages.

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 answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, for example 1.1.11 D.

1.1.1 A free marketing channel where the producer sells to the consumer without a middleman is known as ... marketing.

- A stock sales
- B internet
- C fresh produce
- D direct

1.1.2 The buyer who is very impulsive and price does not matter much.

- A Adopter
- B Traditionalist
- C Innovative
- D Early majority

1.1.3 The following are important aspects of being an entrepreneur:

- (i) Identifying an opportunity
- (ii) Not determined to take business risks
- (iii) Being rewarded
- (iv) Innovation and creativity

Choose the CORRECT combination:

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

1.1.4 A business plan consists of the following components:

- (i) Title page
- (ii) Contents page
- (iii) Executive summary
- (iv) Feasibility study

Choose the CORRECT combination:

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

- 1.1.5 The Labour Legislation Act intended to promote equal opportunity and fair treatment at the workplace:
- A Skills Development Act
 - B Labour Relations Act
 - C Unemployment Insurance Act
 - D Employment Equity Act
- 1.1.6 Which ONE of the following is NOT an economic characteristic of land?
- A Land can be bought and sold
 - B Land is a passive factor of production
 - C Land is destructible
 - D Land varies in production potential
- 1.1.7 The creation of capital by borrowing from financial institutions is called ...
- A capital.
 - B a grant.
 - C credit.
 - D debt.
- 1.1.8 ... is NOT an external force that can affect the business.
- A Politics
 - B Competition
 - C Technology
 - D Economics
- 1.1.9 The type of selection that occurs when selective pressure affects the reproductive success of an individual:
- A Mass selection
 - B Artificial selection
 - C Pedigree selection
 - D Natural selection
- 1.1.10 The following are types of chromosomal mutation except ...
- A inversion.
 - B translocation.
 - C duplication.
 - D insertion.

(10 x 2) (20)

- 1.2 Choose a term/phrase from COLUMN B that matches a description in COLUMN A. Write only the letter (A–H) next to the question numbers (1.2.1 to 1.2.5) in the ANSWER BOOK, for example 1.2.6 J.

COLUMN A		COLUMN B	
1.2.1	Improve consumer confidence in buying environmentally friendly products	A	Cartel
1.2.2	Collusion by suppliers with a purpose of fixing prices higher and restrict competition	B	Monopoly
1.2.3	The life of soil is unlimited	C	Risk sharing
1.2.4	Measure to reduce the risk by working with another party	D	Atavism
1.2.5	Homozygous recessive gene suddenly reappears in a population	E	Eco-labelling
		F	Diversification
		G	Durable
		H	Prepotency

(5 x 2) (10)

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

1.3.1 A market that has many sellers but only one buyer of the product

1.3.2 The art of getting other people to do work in a co-ordinated effort

1.3.3 The proportion of variation in the population that is due to genetic influences

1.3.4 Differences amongst individuals of the same species

1.3.5 Heterozygous offspring show a phenotype that blends the phenotype of homozygous parents

(5 x 2) (10)

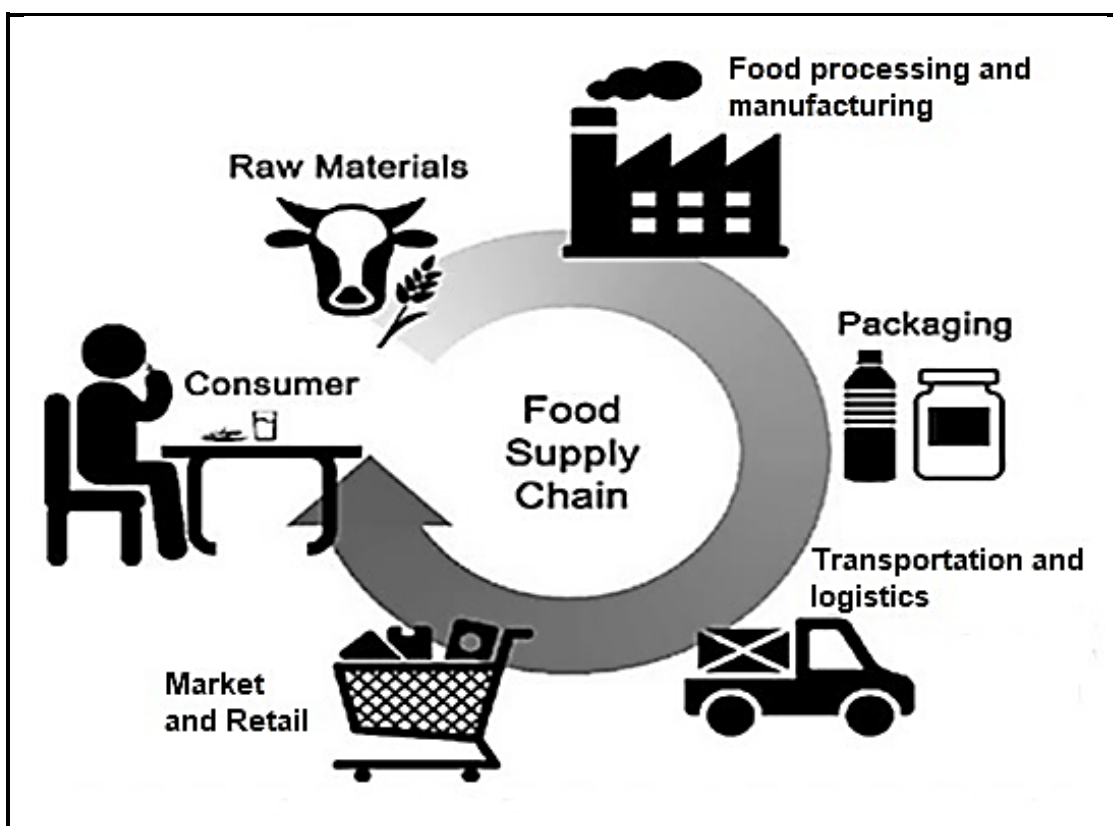
- 1.4 Change the UNDERLINED WORD(S) in each of the following statements to make them TRUE. Write only the answer next to the question numbers (1.4.1 to 1.4.5) in the ANSWER BOOK.
- 1.4.1 Management is an act of initiating and gathering resources to exploit a business opportunity and expanding business.
- 1.4.2 Working capital are medium term assets which are used over a period of more than two to ten years.
- 1.4.3 A dihybrid cross is a genetic cross between parents that have different alleles for one particular gene.
- 1.4.4 Duplication mutation occurs when genetic material is transferred from one chromosome to another.
- 1.4.5 Gene silencing is the process of inserting and attaching genes into a host's DNA using enzymes. (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 shows marketing functions and the path taken by agricultural products from the point of production until it reaches the consumer.



- 2.1.1 Identify from the illustration above the marketing function that matches each of the following descriptions.
- (a) Putting agricultural products into containers. (1)
 - (b) Making the product available using different routes. (1)
- 2.1.2 Give TWO advantages of processing agricultural products to the customers. (2)
- 2.1.3 State why grading of agricultural products is important. (1)
- 2.1.4 Describe TWO environmental concerns to consider when designing packaging material for agricultural products. (2)

2.2 The cost of switching to new suppliers and brand loyalty has caused many consumers to continue purchasing the same product even if its price has relatively increased.

2.2.1 Identify the economic concept being explained by the consumers' behaviour in the scenario above. (1)

2.2.2 State TWO other factors that influence the responsiveness of customers to price change, other than those in the scenario on the previous page. (2)

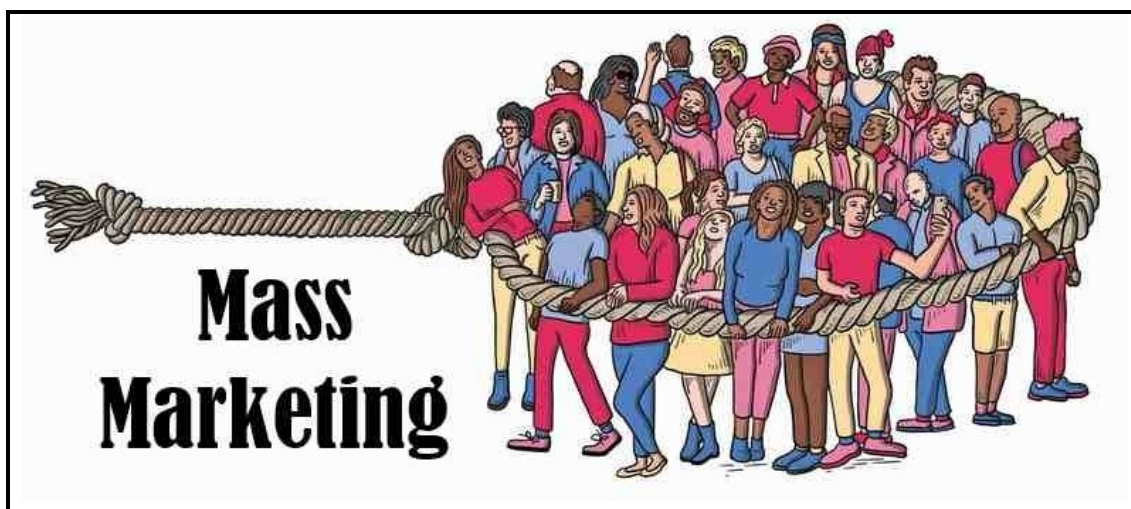
2.2.3 Use the data from the table below to draw a line graph showing the relationship between price and quantity of meat supplied. (6)

PRICE (R)	QUANTITY OF MEAT DEMANDED (KG)	QUANTITY OF MEAT SUPPLIED (KG)
R40	30	5
R60	25	10
R80	20	15
R100	15	20
R120	10	25

2.2.4 Deduce the relationship between price and quantity supplied of a product. (2)

2.2.5 Explain how environmental conditions can negatively affect supply. (2)

2.3 The picture below shows how mass marketing reaches a large audience.



2.3.1 Give TWO methods of advertising that can be used in mass marketing to reach many customers. (2)

2.3.2 Name the marketing approach where the farmer chooses two or more well defined market groups and develop a distinct marketing mix. (1)

2.3.3 State ONE factor to consider when determining the price of goods and services. (1)

- 2.4 The picture below shows a marketing channel where a farmer sells cucumbers directly from its point of production.



- 2.4.1 Name the marketing channel depicted above. (1)
- 2.4.2 Give TWO disadvantages of the marketing channel above to the farmer. (2)
- 2.4.3 Suggest TWO measures to streamline and improve the agribusiness chain. (2)
- 2.4.4 Briefly explain how the principle, open membership, enables the formation of agricultural cooperatives. (2)
- 2.5 A business plan is a key document that a farmer needs to thoroughly prepare to acquire funding to grow a business.
- 2.5.1 Give TWO reasons for drawing up a business plan. (2)
- 2.5.2 Draft a question that can be used to test the feasibility of the business idea. (1)
- 2.5.3 Explain why entrepreneurship is important to the economy of South Africa. (1)

[35]

QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

- 3.1 Agricultural productivity in the 1950's was improved by expanding the cultivated land. However, in early 2000, rapid population growth and urbanisation has reduced the arable land, therefore farmers need to explore new ways of increasing land productivity.

- 3.1.1 Identify the economic characteristic of land reflected in the scenario above. (1)
- 3.1.2 Indicate TWO scientific methods farmers can apply to increase crop yield on agricultural land. (2)
- 3.1.3 Explain why agricultural land has a limited production capacity. (2)
- 3.1.4 State TWO economic functions of land. (2)

- 3.2 The picture below shows farm workers planting rice during the rainy season.

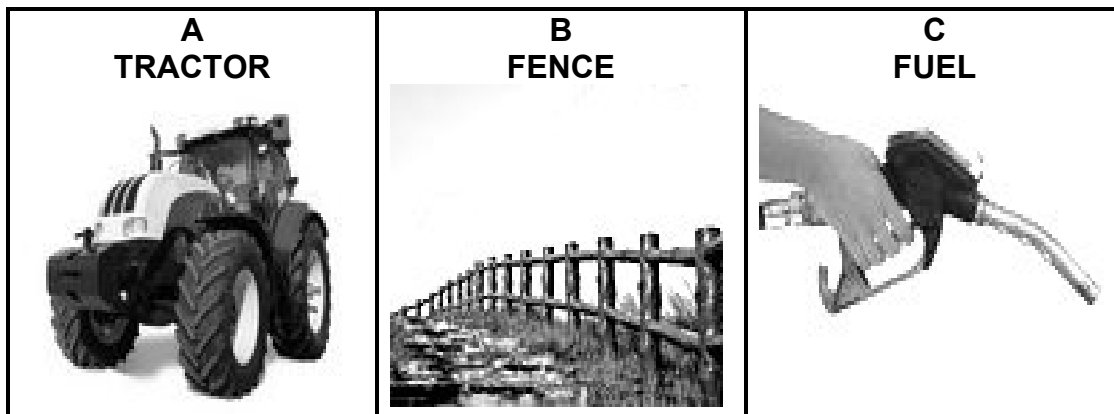


- 3.2.1 Deduce, from the picture above, the type of farm workers employed based on the tasks performed. (1)
- 3.2.2 Give TWO reasons that may lead to the movement of farm workers identified in QUESTION 3.2.1 to other industries. (2)
- 3.2.3 Name the type of skilled workers needed to perform the following tasks:
- (a) Spraying using a knapsack sprayer (1)
- (b) Interpreting farm records (1)

3.2.4 Give ONE advantage of mechanisation to farmers. (1)

3.2.5 Suggest TWO management aspects that a farmer can apply to ensure that workers finish their tasks on time. (2)

3.3 The pictures below, marked **A–C**, represent capital items on a farm.



3.3.1 Classify the items above according to the type of capital that each represents. Write only the type of capital next to the letter **A**, **B** and **C**. (3)

3.3.2 Identify the type of finance needed to purchase capital items **A** and **C**. (2)

3.3.3 Deduce the problem of capital related to capital item **A** over time. (1)

3.4 The table below shows the whole farm budget drawn for a farm.

WHOLE FARM BUDGET FOR 2023 FINANCIAL YEAR			
GROSS MARGIN INCOME		OVERHEAD EXPENDITURE	
ENTERPRISE	INCOME	COSTS	TOTAL
Livestock sales	R34 500,00	General cost	R4 500,00
Maize sale	R20 000,00		
TOTAL	R54 500,00		
NET FARM RETURNS	...		

3.4.1 State TWO overhead expenses that are incurred by the farm above. (2)

3.4.2 Use a formula and calculate the possible net farm returns for this farm using the data in the table above. Show ALL calculations. (3)

3.4.3 Deduce whether the farm is viable or not. Justify your answer. (2)

3.4.4 Differentiate between a *cash flow statement* and an *income statement*. (2)

3.5 Strategic management skills allow the farm manager to identify business challenges and develop contingency plans of time to deal with adverse conditions and reduces the chances of happening.

3.5.1 State from the scenario above why it is important for the farmer to have strategic management skills. (1)

3.5.2 List TWO components for the successful strategic management of a farming enterprise. (2)

3.5.3 Provide TWO economic forces that can impact agricultural enterprises. (2)

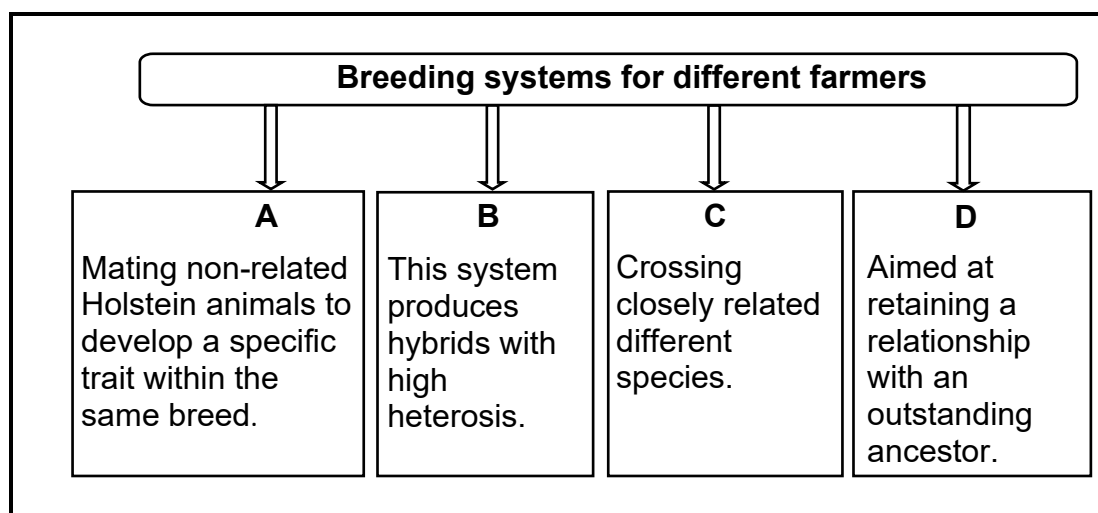
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QUESTION 4: BASIC AGRICULTURAL GENETICS

Start this question on a NEW page.

- 4.1 In shorthorn cattle, black (**B**) coat colour and white (**W**) coat colour are both displayed in the heterozygous individual. Two hybrid shorthorn parents were crossed.
- 4.1.1 Draw a Punnet square to determine the genotype of the cross above. (4)
- 4.1.2 State the phenotypic ratio of the cross above. (1)
- 4.1.3 Calculate the percentage of F₁ offspring that are hybrids. (2)
- 4.1.4 Identify the type of dominance from the cross above. Motivate your answer. (2)
- 4.1.5 State Mendel's Laws of Inheritance that applies to each of the following statements.
- (a) The placement of alleles for different traits on the gametes does not affect each other. (1)
- (b) Gametes only contain one of their parent's alleles. (1)
- 4.2 The somatic cells in cattle are diploid and consist of 29 pairs of autosomes plus one pair of gonosomes.
- 4.2.1 Determine what the chromosomes in the male gametes will consist of after meiotic division. (2)
- 4.2.2 Distinguish between *autosomes* and *gonosomes*. (2)
- 4.2.3 Name ONE quantitative trait in dairy cattle. (1)
- 4.3 Animal breeders look for traits that could be of economic importance and breed selectively for these traits.
- 4.3.1 Give TWO selection methods used by animal breeders. (2)
- 4.3.2 Identify TWO desirable traits which are of economic importance that dairy breeds need to select. (2)
- 4.3.3 Explain how meiosis can cause variation. (2)

4.4



4.4.1 Identify the breeding systems **A–D** used by the different farmers above. (4)

4.4.2 Give TWO advantages of breeding system **A**. (2)

4.4.3 State TWO disadvantages of the inbreeding system. (2)

4.5

Genes can be transferred into individual cells through a process called micro-projectile bombardment. This technique involves accelerating particles to velocities at which they can penetrate plant cell walls through a firing mechanism.

4.5.1 Identify the equipment used in gene firing. (1)

4.5.2 Name the organism with altered genes. (1)

4.5.3 Identify the technique that uses electric current to increase permeability of plasmalemma of the gene of interest. (1)

4.5.4 Explain how genetically modified crops can assist farmers in reducing production costs. (2)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150