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SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

MAY/JUNE 2025

MARKS: 150

TIME: 2½ hours

This question paper consists of 18 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, e.g. 1.1.11 B.

- 1.1.1 Product promotion using mass media involves ...
- A in-store promotion.
 - B personal selling.
 - C radio and television stations.
 - D agricultural shows.
- 1.1.2 The statement indicates the relationship between the price, supply and demand:
- A The higher the price, the higher the demand and the lower the supply.
 - B As the price rises, the supply increases and the demand decreases.
 - C There is an inverse relationship between price, supply and demand.
 - D As the price increases, the supply and demand decrease.
- 1.1.3 ONE of the following does NOT address an advantage of a free marketing system for farmers:
- A Selling where they want and at their own prices
 - B Lower marketing costs per unit
 - C Are encouraged to work hard and produce high quality products
 - D Very little or no delay in receiving payment
- 1.1.4 The following are TRUE about the standard format and components of an agribusiness plan:
- (i) A standard business plan will include employees' personal details
 - (ii) Title page with business name, owner's details and address
 - (iii) Provides information on how the product is produced
 - (iv) Consists of marketing plan with target market
- Choose the CORRECT combination below:
- A (ii), (iii) and (iv)
 - B (i), (ii) and (iv)
 - C (i), (iii) and (iv)
 - D (i), (ii) and (iii)



- 1.1.5 ... does NOT imply restoration of land potential.
- A Preventing soil erosion
 - B Constructing contours
 - C Controlling bush encroachment
 - D Practising overgrazing
- 1.1.6 A farm worker who receives wages and benefits monthly until retirement:
- A Casual worker
 - B Holiday worker
 - C Permanent worker
 - D Seasonal worker
- 1.1.7 Knowledge of veld management by a cattle production unit manager is aligned to the ... skill.
- A decision-making
 - B problem-solving
 - C conceptual
 - D production and operational
- 1.1.8 The following are the components of a Cash Flow Statement in a business:
- (i) Receipts of operating income and capital sales
 - (ii) The value of assets and liabilities
 - (iii) Payments made for operating costs and expenses
 - (iv) The amount of cash available at the start of each month
- Choose the CORRECT combination below:
- A (i), (iii) and (iv)
 - B (ii), (iii) and (iv)
 - C (i), (ii) and (iv)
 - D (i), (ii) and (iii)
- 1.1.9 A pattern of inheritance shown by the alleles I^A , I^B and I^O determining the blood group is an example of ...
- A polygenic inheritance.
 - B multiple alleles.
 - C co-dominance.
 - D prepotency.
- 1.1.10 ONE of the following is NOT a technique used to genetically modify plants and animals:
- A Electroporation
 - B Gene splicing
 - C Micro-injection
 - D Microporation



- 1.2 Choose a term/phrase from 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 K.

COLUMN A		COLUMN B	
1.2.1	The type of buyers who work for commission on behalf of other participants	A	transportation
		B	manager
1.2.2	The pathway that agricultural products take from farms to consumers	C	brokers
		D	biological
1.2.3	Responsible for putting strategies in place to keep a farm more productive and profitable	E	Labour Relations Act, 1995 (Act 66 of 1995)
		F	skilled labour
1.2.4	Promotes economic development, social justice and democracy on the farm	G	Skills Development Act, 1998 (Act 97 of 1998)
		H	chemical
1.2.5	Mutagenic agent caused by viruses	I	retailers
		J	marketing chain

(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 measure of how the production and the provision of goods respond to a change in price

1.3.2 An item with value that serves as security for credit

1.3.3 A method of selecting animals that is based on the performance of the offspring

1.3.4 The total number of gene effects that are inherited and measured by the performance of the progeny

1.3.5 The use of statistics to analyse biological data

(5 x 2)

(10)



- 1.4 Change the UNDERLINED WORD in each of the following statements to make them TRUE. Write only the word(s) next to the question numbers (1.4.1 to 1.4.5) in the ANSWER BOOK.
- 1.4.1 Shortage occurs when quantities of products supplied, exceed quantities demanded.
- 1.4.2 A budget is a legally binding document between a farmer and a farm worker.
- 1.4.3 High heritability is determined mostly by environmental factors.
- 1.4.4 The repeated mating of unrelated superior bulls with inferior cows, generation after generation, refers to inbreeding.
- 1.4.5 A pattern of inheritance where the offspring has an intermediate characteristic of the parents is complete dominance. (5 x 1) (5)

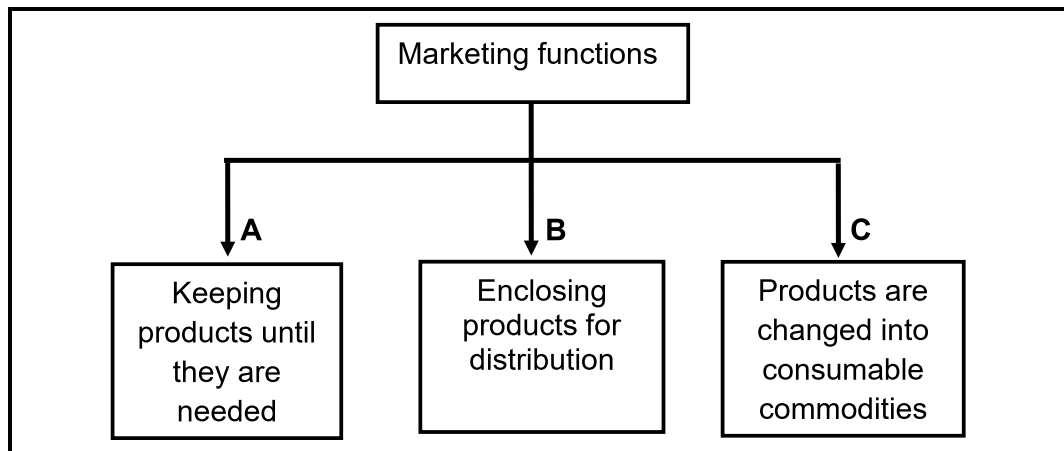
TOTAL SECTION A: 45



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

Start this question on a NEW page.

2.1 The diagram below indicates the marketing functions.



2.1.1 Identify the marketing functions represented in **A** and **B**. (2)

2.1.2 State TWO advantages of the marketing function represented in **C**. (2)

2.1.3 Name the marketing function that is NOT indicated above. (1)

2.2 Indicate whether EACH of the statements below applies to marketing or selling.

2.2.1 It occurs when decisions are made before the manufacturing cycle of the products to be produced. (1)

2.2.2 It offers the products that are already produced. (1)

2.2.3 It involves the designing of the product so that it becomes acceptable to consumers. (1)

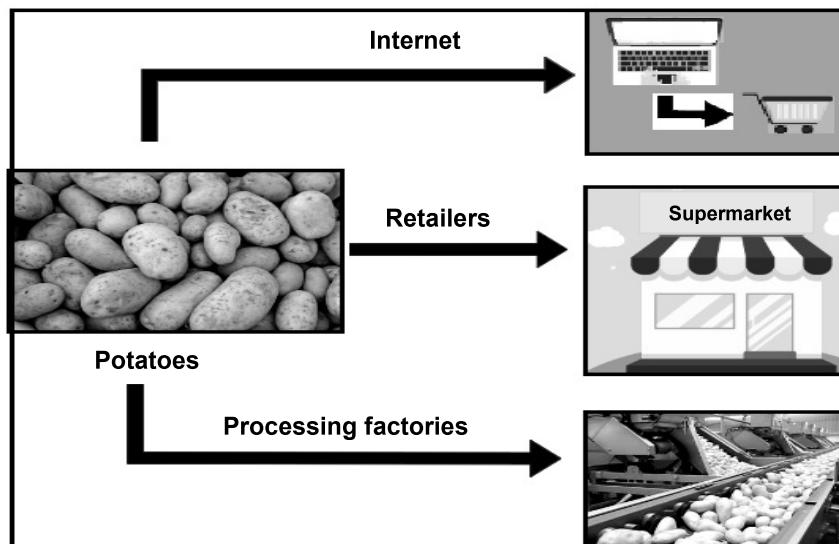


2.3 The diagram below illustrates the supply and demand in a market.



- 2.3.1 Name the condition in the market that is illustrated by the diagram above. (1)
- 2.3.2 Indicate what will happen to the price of a product when supply is more than demand. (1)
- 2.3.3 State TWO factors that determine the supply of a product. (2)

2.4 The diagram below illustrates the marketing approach that is commonly used by farmers in a market.



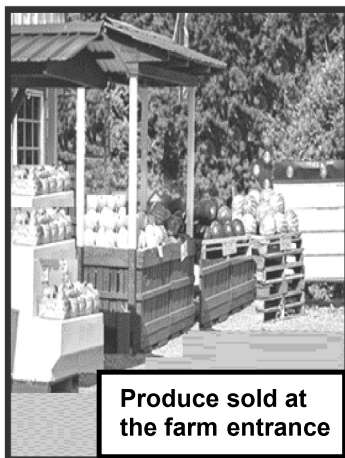
- 2.4.1 Identify the marketing approach illustrated in the diagram above. (1)
- 2.4.2 Give a reason for the answer to QUESTION 2.4.1 above. (1)
- 2.4.3 State TWO other marketing approaches that are used to market agricultural products. (2)

- 2.5 The picture below illustrates farmers working together to pool their products for sale.

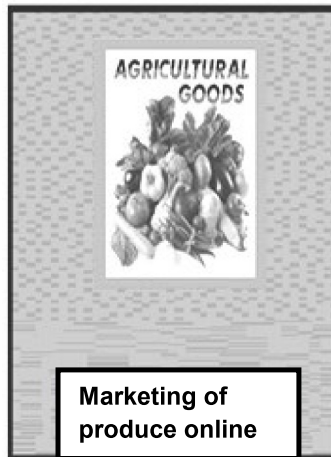


- 2.5.1 Deduce the marketing system represented in the picture above. (1)
- 2.5.2 Name ONE type of the marketing system in QUESTION 2.5.1. (1)
- 2.5.3 Name TWO principles of the marketing system represented in the picture above. (2)
- 2.6 The pictures below represent different marketing channels used by farmers.

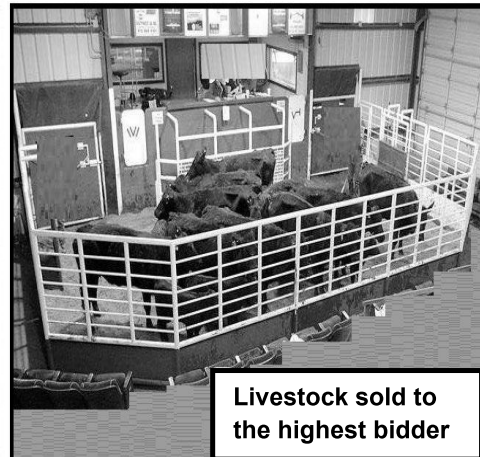
PICTURE A



PICTURE B



PICTURE C



- 2.6.1 Identify the marketing channels represented in:
- (a) PICTURE B (1)
- (b) PICTURE C (1)
- 2.6.2 State TWO advantages of the marketing channel represented in PICTURE A for the consumer. (2)

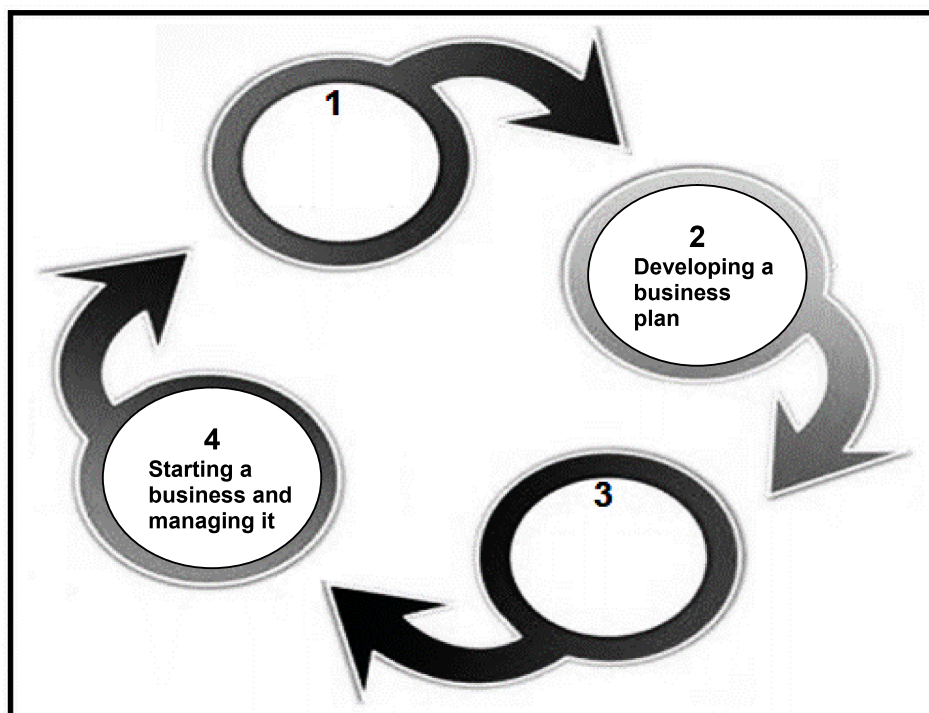
- 2.7 The table below indicates some of the factors that hamper the marketing of agricultural products.

A PERISHABILITY	B POOR INFRASTRUCTURE	C LONG DISTANCES TO MARKETS
----------------------------------	--	--

Match the statements (2.7.1–2.7.3) with the factors above that hamper the marketing of agricultural products:

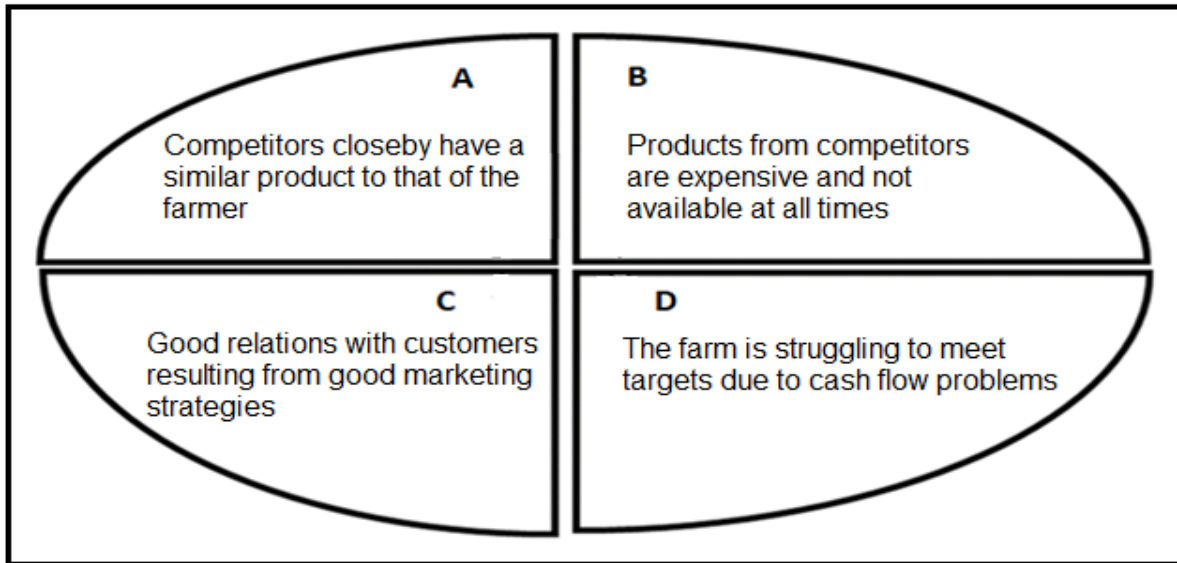
- 2.7.1 Producing closer to markets (1)
- 2.7.2 Provision of cooler trucks or containers to prevent spoilage during transportation (1)
- 2.7.3 Improving the condition of roads in rural areas to facilitate marketing (1)

- 2.8 The flow diagram below illustrates the phases of the entrepreneurial process.



- 2.8.1 State the phases of the entrepreneurial process represented by:
- (a) 1 (1)
- (b) 3 (1)
- 2.8.2 Give TWO reasons for having phase 2 in the entrepreneurial process. (2)

2.9 The diagram below explains the components of the SWOT analysis.



Identify the letter (**A–D**) in the diagram that represents EACH of the following components of the SWOT analysis:

- | | | |
|-------|-------------|-------------|
| 2.9.1 | Opportunity | (1) |
| 2.9.2 | Weakness | (1) |
| 2.9.3 | Threat | (1) |
| 2.9.4 | Strength | (1) |
| | | [35] |

QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

3.1 The picture below shows sheep raised on a piece of land.



3.1.1 State TWO functions of land as depicted in the picture above. (2)

3.1.2 State THREE economic characteristics of land. (3)

3.2 Labour is a huge expenditure in a farming enterprise.

3.2.1 State TWO components of a contract between a farmer and a farm worker. (2)

3.2.2 Indicate TWO labour problems resulting from farm workers moving to other industries. (2)

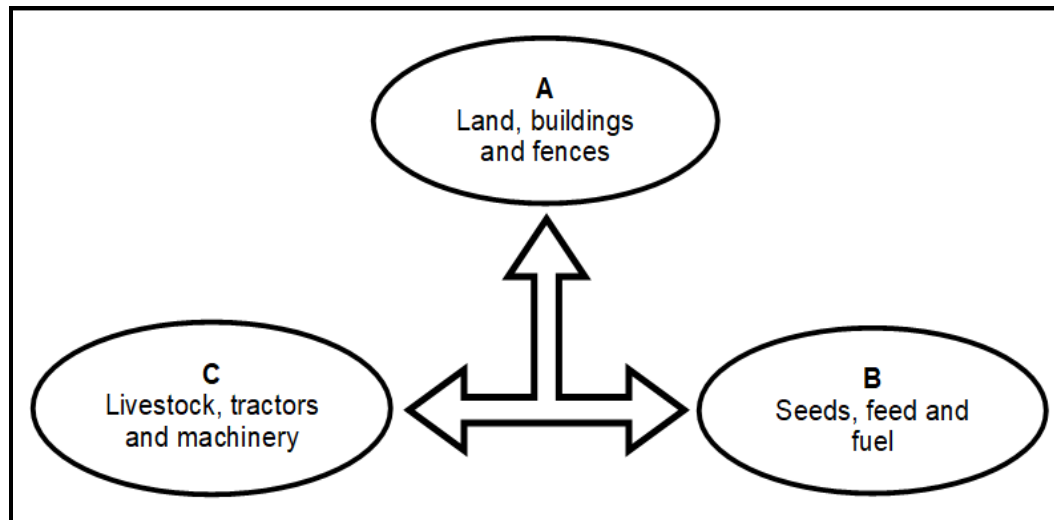
3.2.3 Suggest TWO ways in which a farmer can retain farm workers. (2)

3.2.4 Indicate the implication of EACH of the following labour Acts on the working conditions of farm workers:

(a) Basic Conditions of Employment Act, 1997 (Act 95 of 1997) (1)

(b) Occupational Health and Safety Act, 1993 (Act 85 of 1993) (1)

- 3.3 The schematic representation below shows different capital items found on a farm.



- 3.3.1 Indicate the type of capital represented by EACH of the following:

- (a) B (1)
- (b) C (1)
- (c) A (1)

- 3.3.2 Suggest TWO methods of creating capital in a farming business. (2)

- 3.3.3 Identify the problem of capital the farmer is likely to encounter with regard to EACH of the following statements:

- (a) Aging, wear and tear of farm machinery and vehicles (1)
- (b) Inability to acquire capital items such as machinery, land, buildings and livestock (1)
- (c) Theft, occurrence of diseases among livestock, incidences of droughts and pests (1)

3.4 The table below shows the assets and liabilities of a farming business.

ASSETS		LIABILITIES	
DESCRIPTION	VALUE (R)	DESCRIPTION	VALUE (R)
Current assets	205 000	Current liabilities	75 000
Medium-term assets	1 050 000	Medium-term liabilities	150 000
Long-term assets	3 500 000	Long-term liabilities	1 000 000
TOTAL ASSETS	A	TOTAL LIABILITIES	B

3.4.1 Identify the type of financial record represented in the table above. (1)

3.4.2 Determine the value of EACH of the following:

(a) A (1)

(b) B (1)

3.4.3 Name the document used to record all the farm assets. (1)

3.4.4 Calculate the net worth using the data in the table above. Show ALL calculations including the formula. (3)

3.5 A group of farmers started farming with different crops and citrus fruits. They began experiencing a drop in citrus production due to insect infestations. They had to substitute citrus with avocado and banana plants.

3.5.1 Identify TWO risk management strategies that will benefit the farmers in the scenario above. (2)

3.5.2 Give a reason for EACH risk management strategy identified in QUESTION 3.5.1. (2)

3.5.3 Indicate the primary source of risk in the scenario above. (1)

3.6 Indicate the type of force that influences the farming business represented by EACH of the following statements:

3.6.1 Money available to spend by consumers (1)

3.6.2 Equipment and workforce available on a farm (1)

[35]



QUESTION 4: BASIC AGRICULTURAL GENETICS

Start this question on a NEW page.

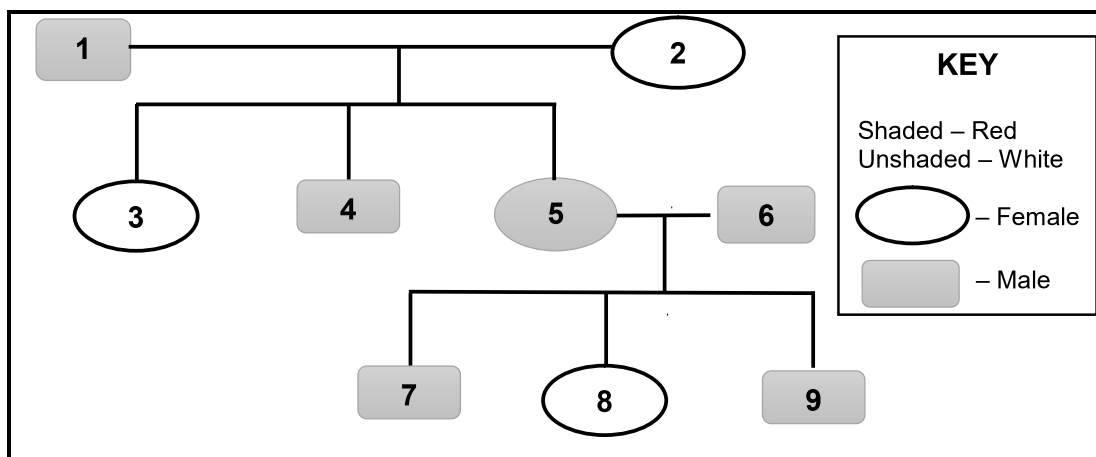
- 4.1 The genotypes of individuals differ from one animal to the other, giving rise to different phenotypes among animals within the same species.

4.1.1 Differentiate between *genotype* and *phenotype*. (2)

4.1.2 Name the phenomenon that refers to the differences in phenotypes among animals of the same species. (1)

4.1.3 State TWO factors that can cause the phenomenon named in QUESTION 4.1.2 above. (2)

- 4.2 The pedigree diagram below shows the inheritance of colour from the crossing of a red rooster and a pure-bred white hen.



4.2.1 Determine the number of generations in the pedigree diagram above. (1)

4.2.2 Indicate the process that occurred between the gametes of individuals 1 and 2 that resulted in individuals with numbers 3, 4 and 5 in the crossing above. (1)

4.2.3 Name the phenotype of individual 8. (1)

4.2.4 Indicate whether individual 1 is homozygous or heterozygous. (1)

4.2.5 Justify, with a reason, the answer to QUESTION 4.2.4 above. (1)



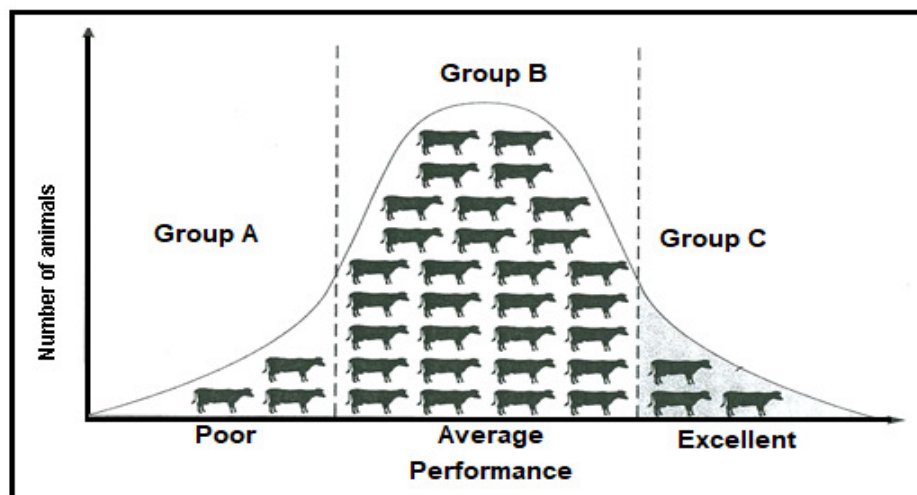
- 4.3 A heterozygous black (B) goat with floppy ears (s) is crossed with a white (b) goat with heterozygous sharp (S) ears. The colour black is dominant over white, and sharp ears are dominant over floppy ears.

Gametes	bS	bs	bS	bs
Bs	BbSs	Bbss	BbSs	Bbss
bs	1	bbss	bbSs	bbss
Bs	BbSs	2	BbSs	Bbss
bs	bbSs	bbss	bbSs	bbss

- 4.3.1 Identify the type of crossing represented in the Punnet square above. (1)
- 4.3.2 Name the genotype of the parent with floppy ears. (1)
- 4.3.3 Indicate the phenotype of EACH of the following individuals:
- (a) Number 1 (1)
- (b) Number 2 (1)
- 4.3.4 Calculate the percentage of individuals that are genotypically the same as the white parent. (2)
- 4.4 Height in animals is one of the traits that is considered for breeding. Assuming that the height in cattle is influenced by three pairs of genes, with a base height (aabbdd) of 135 cm, each additive allele contributes 10 cm to the base height.
- 4.4.1 Calculate the height of the animal with an AaBbDD genotype. (2)
- 4.4.2 Determine ONE genotype of an animal with a height of 185 cm. (1)



- 4.5 The graph below represents a normal distribution curve used in the selection of cows for a breeding programme based on their milk production.



- 4.5.1 Identify in the graph above the most suitable group of animals (A, B or C) to be selected as parents in a breeding programme for the next generation. (1)
- 4.5.2 Give a reason for the answer to QUESTION 4.5.1. (1)
- 4.5.3 Identify the method of selection used in the breeding programme above. (1)
- 4.6 The letters (A–D) below represent the breeding systems commonly used by farmers.
- A Brahman bull X daughter
 - B Nguni bull X Sussex cows
 - C Different superior Bonsmara bulls X inferior cows generation after generation
 - D Male donkey X female horse
- Identify the breeding system (A–D) above that corresponds with EACH of the following descriptions:
- 4.6.1 Produces maximum hybrid vigour (1)
- 4.6.2 The offspring are hardy and can work under unfavourable conditions (1)
- 4.6.3 The breeding system that leads to deformities (1)

- 4.7 The table below shows the heritability of different characteristics in cattle and goat breeds.

CHARACTERISTIC	HERITABILITY (%) CATTLE	HERITABILITY (%) GOATS
Birth-weight	38	35
Post-wean weight	30	60
Meat tenderness	65	35
Lean meat	38	90
Slaughter weight	90	65

Draw a line graph to compare the heritability of different characteristics in cattle and goat breeds. (6)

- 4.8 Genetic modification is a technique used to alter the genetic composition of organisms.

4.8.1 State TWO potential benefits of GM crops for the environment. (2)

4.8.2 State TWO advantages of genetic modification over traditional methods. (2)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150

