basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

# SENIOR CERTIFICATE EXAMINATIONS/
# NATIONAL SENIOR CERTIFICATE EXAMINATIONS

## AGRICULTURAL SCIENCES P2

## MAY/JUNE 2026

**MARKS: 150**

**TIME: 2½ hours**

**This question paper consists of 18 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

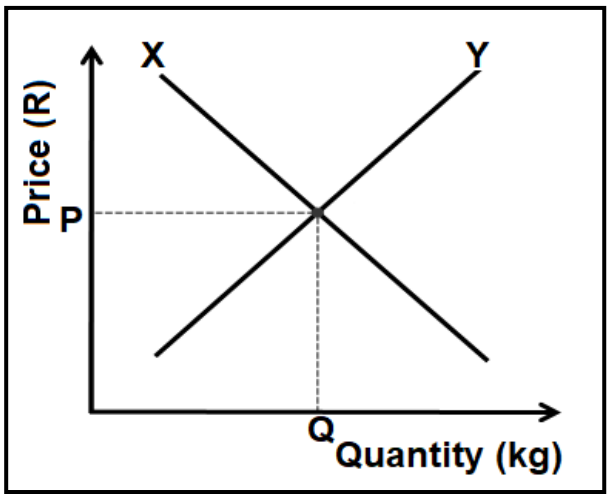
## QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the 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 ONE of the following is a disadvantage of a free marketing system:

A Payment is in the form of cash
B Uses a middleman
C Very little delay in payment
D Prices fluctuate considerably

1.1.2 Line **X** in the graph below represents the … in the market.




A market equilibrium
B shortage
C supply
D demand

1.1.3 Companies that buy products from foreign markets are known as …

A retailers.
B importers.
C brokers.
D exporters.

1.1.4 The following are reasons for drawing up a business plan:

(i) To determine whether it will be possible to implement the business idea successfully
(ii) To pay back a bank loan
(iii) To guide daily operations
(iv) To determine the funds needed for a business

Choose the CORRECT combination:

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

1.1.5 ONE of the following is NOT a function of land:

A Depreciates over time
B Provides raw materials
C Enables the production of food, fibre and fuel
D Provides space and area

1.1.6 Poor labour management can be corrected by …

A working overtime.
B improper supervision of daily duties allocated to labourers.
C proper planning of physical and economic activities on a farm.
D employing more labourers.

1.1.7 ONE of the following is the main component of a Cash Flow Statement:

A Net worth
B Opening balance
C Assets
D Liabilities

1.1.8 … farm management is the ability to proactively deal with challenges that may occur in future.

A Strategic
B Integrated
C Organised
D Controlled

1.1.9 … is the selection of individuals based on the quality of their offspring.

A Family selection
B Mass selection
C Pedigree selection
D Progeny selection

1.1.10 The following are the main types of gene mutations:

(i) Deletion
(ii) Inversion
(iii) Insertion
(iv) Translocation

Choose the CORRECT combination:

A (i), (ii) and (iv)
B (ii), (iii) and (iv)
C (i), (ii) and (iii)
D (i), (iii) and (iv) (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–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 | Most agricultural products require more space during transportation and storage in relation to their value | A farm management<br>B in-store promotion |
| 1.2.2 | A method of promoting products by placing posters and billboards | C bulkiness<br>D industrialisation |
| 1.2.3 | The application of basic business and scientific principles of agriculture to the farm business | E BBBEE<br>F perishability |
| 1.2.4 | A way of reducing the risk of marketing farm products | G out crossing |
| 1.2.5 | The breeding of individuals from the same breed that are not closely related | H advertising<br>I insurance<br>J inbreeding |

(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 Individuals who market products on behalf of farmers

1.3.2 A labourer that has no formal training but can perform a specialised task due to experience gained over years

1.3.3 The action of one gene is controlled by another gene

1.3.4 The passing on of traits from generation to generation

1.3.5 The predicted potential of animals to be selected for breeding based on their scores in comparison with other possible animals (5 x 2) (10)

1.4 Change the UNDERLINED WORD 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 <u>Marketing</u> is the process of discovering, evaluating and exploiting new business opportunities.

1.4.2 A list of all capital goods on a farm is referred to as an <u>asset</u>.

1.4.3 <u>Sex-linked</u> characteristics are controlled by one gene that produces variation with distinct phenotypes.

1.4.4 Alternative forms of the same gene, which are found at a particular position on a pair of homologous chromosomes, are the <u>genes</u>.

1.4.5 <u>Micro-injection</u> is the process of using an electric pulse to introduce a DNA into a cell through temporary pores in the cell membrane.
(5 x 1) (5)

**TOTAL SECTION A: 45**

## SECTION B

## QUESTION 2: AGRICULTURAL MARKETING AND MANAGEMENT

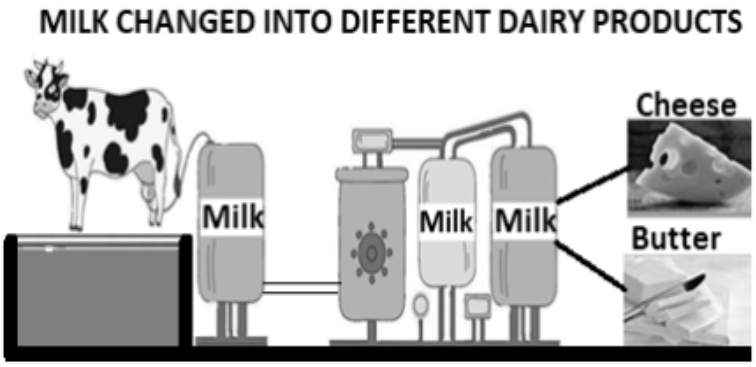
Start this question on a NEW page.

2.1 The pictures below illustrate the functions of marketing.

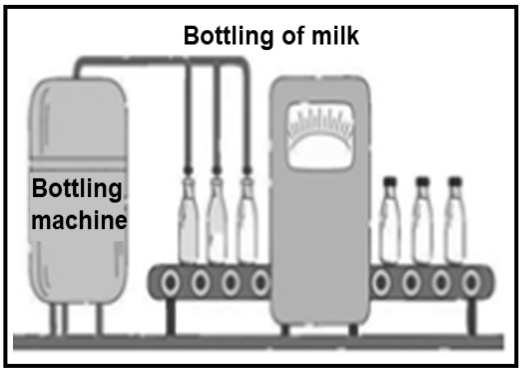
**PICTURE A**



**PICTURE B**




**PICTURE C**




**PICTURE D**

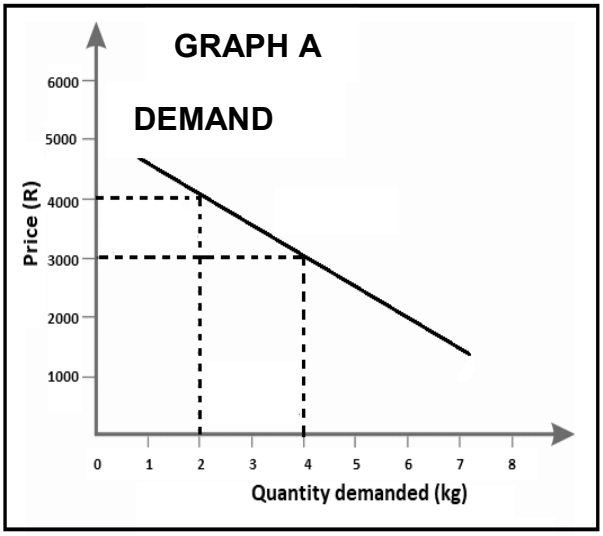


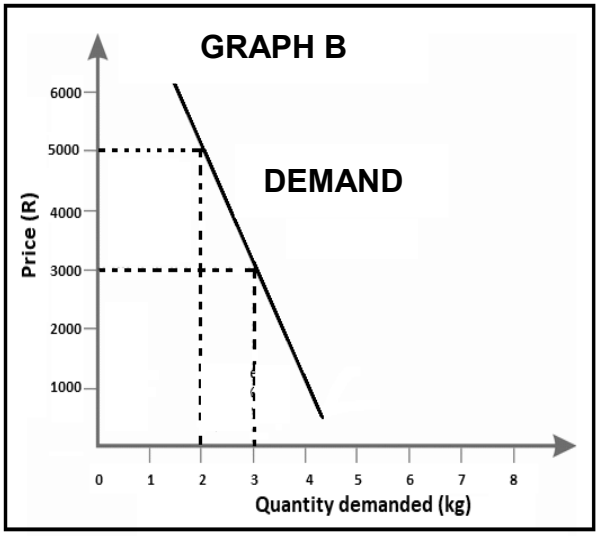

2.1.1 Identify the marketing functions illustrated in PICTURE **A** and PICTURE **D**. (2)

2.1.2 State ONE guideline for the marketing function in PICTURE **C**. (1)

2.1.3 Name TWO advantages of the marketing function in PICTURE **B**. (2)

2.2 The graphs below show the demand for products at different prices.




2.2.1 Indicate the type of price elasticity of demand illustrated by EACH of the following:

(a) GRAPH B (1)

(b) GRAPH A (1)

2.2.2 Suggest a reason for the answer to QUESTION 2.2.1(b). (2)

2.2.3 State ONE factor that could have led to the response of consumers in GRAPH B. (1)

2.3 The table below shows the supply and demand of mangoes at different prices.

| PRICE (R) | QUANTITY OF MANGOES DEMANDED (bag) | QUANTITY OF MANGOES SUPPLIED (bag) |
|---|---|---|
| 60 | 100 | 20 |
| 70 | 80 | 40 |
| 80 | 60 | 60 |
| 90 | 50 | 80 |
| 100 | 40 | 100 |
| 110 | 30 | 120 |

2.3.1 Identify the equilibrium price for mangoes in the market in the table above. (1)

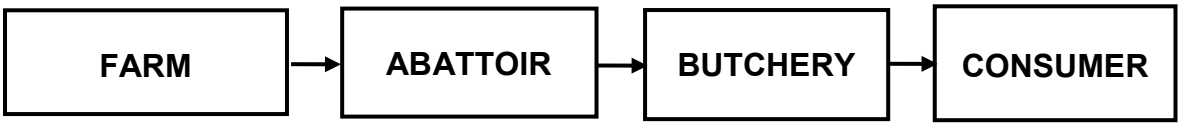
2.3.2 Explain the relationship between *price* and *supply*, as depicted above. (2)

2.3.3 State TWO factors that could affect the supply of mangoes. (2)

2.3.4 Indicate TWO factors that may hamper the marketing of mangoes. (2)

2.4 Describe what happens at a fresh produce market as a channel of free marketing. (2)

2.5 The schematic representation below shows the path a product takes from the farm to the consumer.




2.5.1 Identify, in the schematic representation above, EACH of the following:

(a) The processing plant (1)

(b) The retailer (1)

(c) The producer (1)

2.5.2 State TWO ways to streamline and improve the agribusiness chain. (2)

2.6 Rearrange the descriptions of the phases of the entrepreneurial process below in the CORRECT order.

Write ONLY the letters (**A**–**D**) in the ANSWER BOOK.

A Determining the available labour, machinery and equipment
B Production and supply of goods
C Planning the business to secure funding
D Realisation of the absence of suitable products and services (4)

2.7 The extract below shows the content page of a business plan.

| |
|---|
| Title page …… 1 |
| Summary …… …… 2 |
| Overview …….. 4 |
| Human resource plan …… 8 |

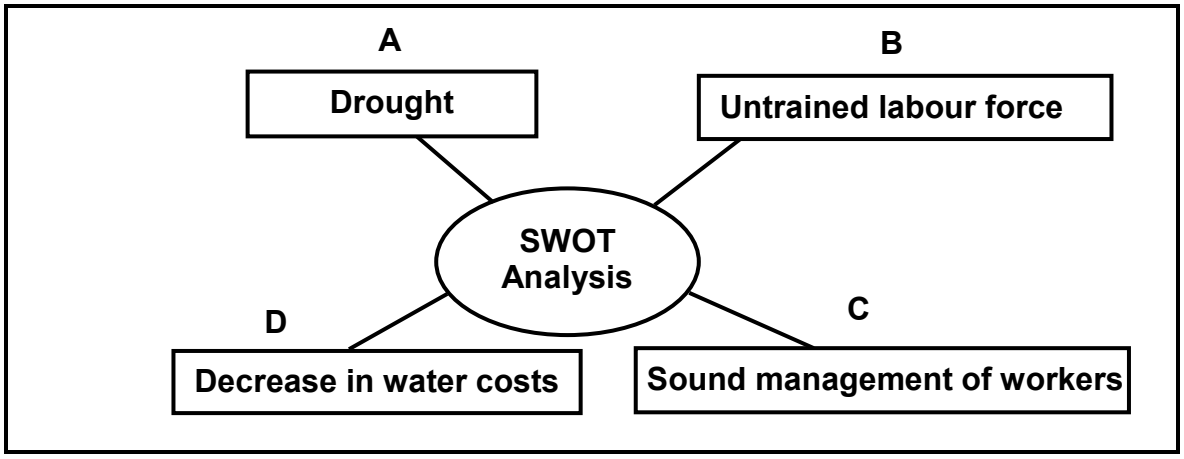
2.7.1 State ONE aspect that should be included in EACH of the following components of a business plan:

(a) Title page (1)

(b) Human resource plan (1)

2.7.2 Indicate ONE item that should be included in a business plan, except for those stated in the content page in QUESTION 2.7. (1)

2.8 The illustration below represents components of a SWOT analysis.



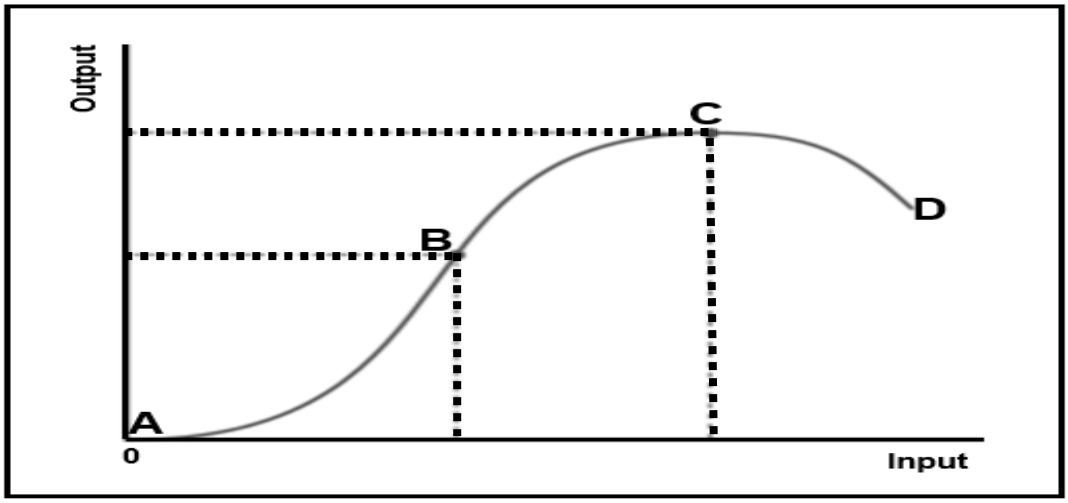

Indicate the components of the SWOT analysis represented by **A**, **B**, **C** and **D**. (4)

**[35]**

## QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

3.1 The graph below illustrates the law of diminishing returns.




3.1.1 Identify the range from point **A** to **D** where EACH of the following occurs:

(a) Diminishing returns (1)

(b) Negative returns (1)

(c) Increasing returns (1)

3.1.2 Identify the letter (**A**–**D**) that represents a point of maximum production. (1)

3.1.3 State ONE method to improve the productivity of land. (1)

3.2 Name the economic characteristic of land that is associated with EACH of the statements below.

3.2.1 A road expansion into a wheat field (1)

3.2.2 An empty piece of land was bought for R150 000 in 2015. Now, in 2026, the same piece of land is valued at R350 000. (1)

3.3 The agricultural sector in South Africa is still faced with labour challenges ranging from shortages and health issues to other related problems. Even though legislation is trying to address some of the issues pertaining to labour, there are still a lot of challenges.

3.3.1 Indicate ONE factor that may result in the loss of farm labourers to industries. (1)

3.3.2 Explain how ill health among labourers threatens the stability of the labour force and production on the farm. (2)

3.3.3 Suggest TWO implications of the Labour Relations Act, 1995 (Act 66 of 1995) for farm workers. (2)

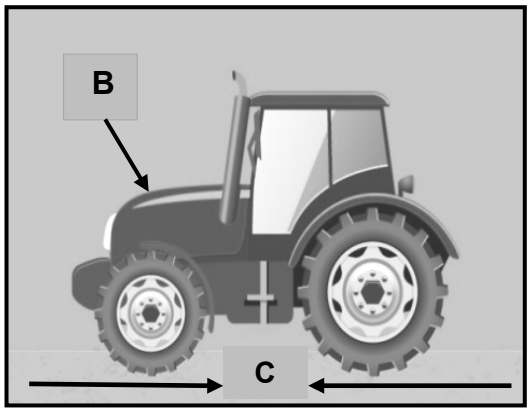
3.4 In the agricultural sector, it is vital that an employer and an employee enter into a contract.

3.4.1 Name an item in the contract that indicates an agreement between the employer and the employee. (1)

3.4.2 State ONE other item that should be included in a contract. (1)

3.5 The pictures below represent different capital items bought by a farmer.




3.5.1 Indicate the types of capital represented by **A** and **B**. (2)

3.5.2 Capital item **C**, on which the tractor is standing, can be used as collateral.

Name the source of credit used to purchase capital item **C**. (1)

3.5.3 Deduce ONE problem related to capital item **B**. (1)

3.6 The table below shows a financial record of estimated income and expenditure in a farming business.

| EXPENDITURE (R) | | INCOME (R) | |
|---|---|---|---|
| **ITEM** | **AMOUNT** | **ITEM** | **AMOUNT** |
| Feed costs | 45 300 | Sales of sheep | 145 000 |
| Pesticides | 32 100 | Sales of maize | 80 000 |
| Wages | 28 500 | Sales of goats | 55 000 |
| Electricity | 11 200 | | |
| Fuel | 9 000 | | |
| Seeds | 5 000 | | |
| Insurance | 2 300 | | |
| **TOTAL** | **133 400** | **TOTAL** | **---** |

3.6.1 Name the financial record represented in the table above. (1)

3.6.2 Identify an example of EACH of the following in the table above:

(a) Fixed costs (1)

(b) Variable costs (1)

3.6.3 Calculate the profit/loss for the farming business above. (3)

3.7 A manager experienced an oversupply of produce in the market due to the supply of similar produce by other farmers. This led to a drop in the price of the produce and a subsequent loss of profit.

3.7.1 State the type of risk encountered by the manager in the scenario above. (1)

3.7.2 Suggest ONE management strategy that a manager can apply to lower the risk stated in QUESTION 3.7.1. (1)

3.7.3 Name ONE management principle that could make the farm manager overcome the problem in the scenario above. (1)

3.7.4 Explain how competition, as an external force, affected the farming business in the scenario above. (2)

3.8 The table below provides information on the income and expenditure of different farmers.

| **FARMER** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **INCOME (R)** | 30 000 | 60 000 | 50 000 | 70 000 | 60 000 |
| **EXPENDITURE (R)** | 50 000 | 40 000 | 30 000 | 20 000 | 10 000 |

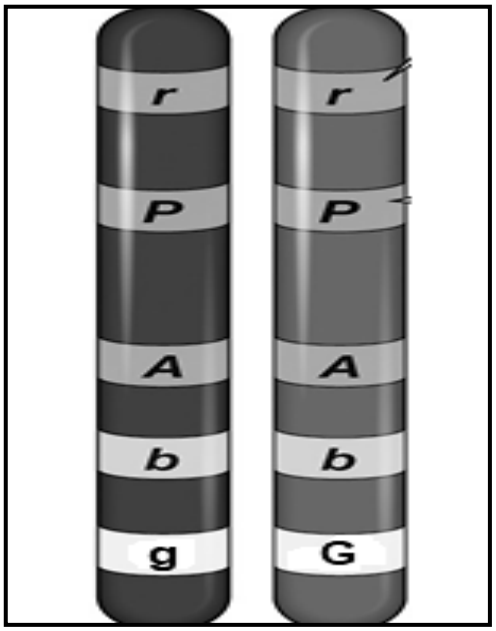
Draw a line graph to show the income and expenditure for the different farmers using the information above. (6)

**[35]**

## QUESTION 4: BASIC AGRICULTURAL GENETICS

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4.1 The diagram below represents a pair of chromosomes.




4.1.1 Identify in the diagram above, the alleles for EACH of the following descriptions:

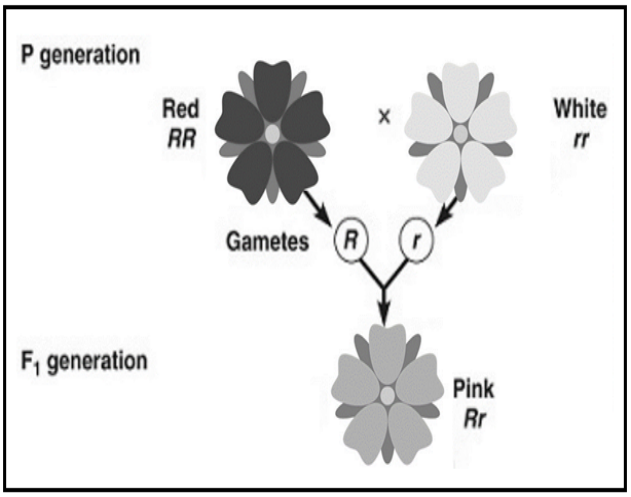
(a) Heterozygous alleles (1)

(b) Homozygous recessive alleles (1)

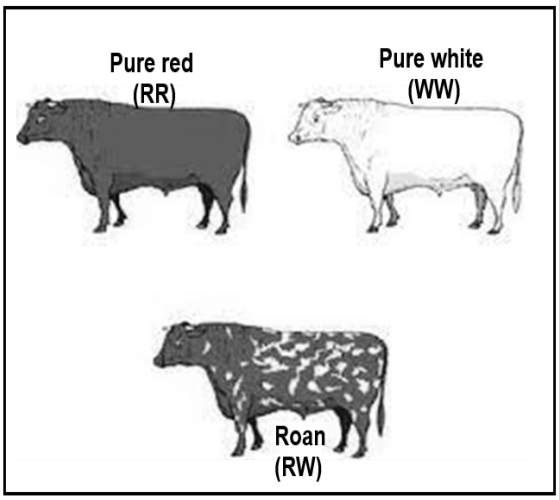
4.1.2 Give a term for the specific fixed position where a gene is situated on the chromosome above. (1)

4.2 The pictures below represent different patterns of inheritance.

**PICTURE A**




**PICTURE B**



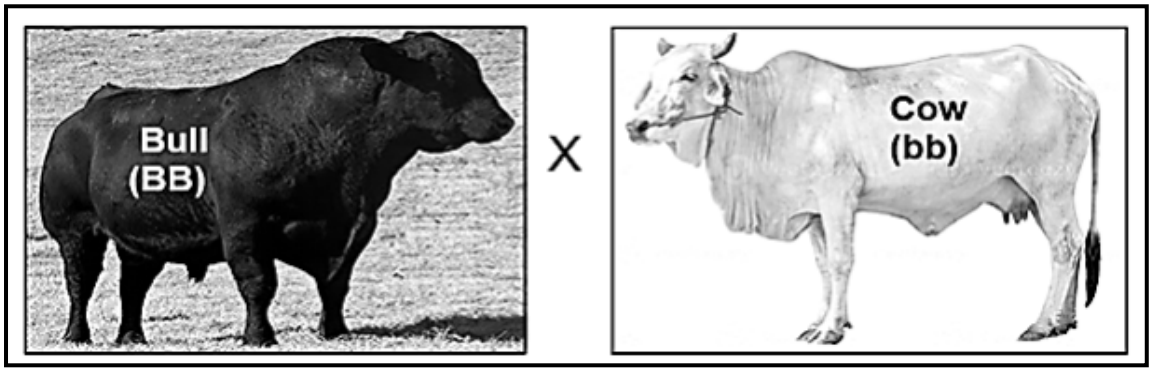

4.2.1 Identify the pattern of inheritance represented by EACH of the following:

(a) PICTURE A (1)

(b) PICTURE B (1)

4.2.2 Give a reason for the answer to QUESTION 4.2.1(b). (1)

4.3 The illustration below represents the crossing of a black bull and a white cow.




4.3.1 Identify the type of crossing indicated above. (1)

4.3.2 Draw a Punnet square showing the crossing above. (4)

4.3.3 Calculate the percentage of black offspring in the $F_1$-generation. (2)

4.4 The milk production of a dairy cow is controlled by three pairs of genes. The genotype ppqqrr gives a milk yield of 40 litres per day. Each additive dominant allele adds 5 litres of milk per day.

4.4.1 Indicate the type of inheritance that controls the milk yield of the dairy cow above. (1)

4.4.2 Calculate the potential maximum milk yield of the dairy cow above. (3)

4.4.3 Name the genotype that can produce 60 litres of milk per day. (1)

4.5 Genetic differences within a population of farm animals and crops is the foundation for selection and breeding.

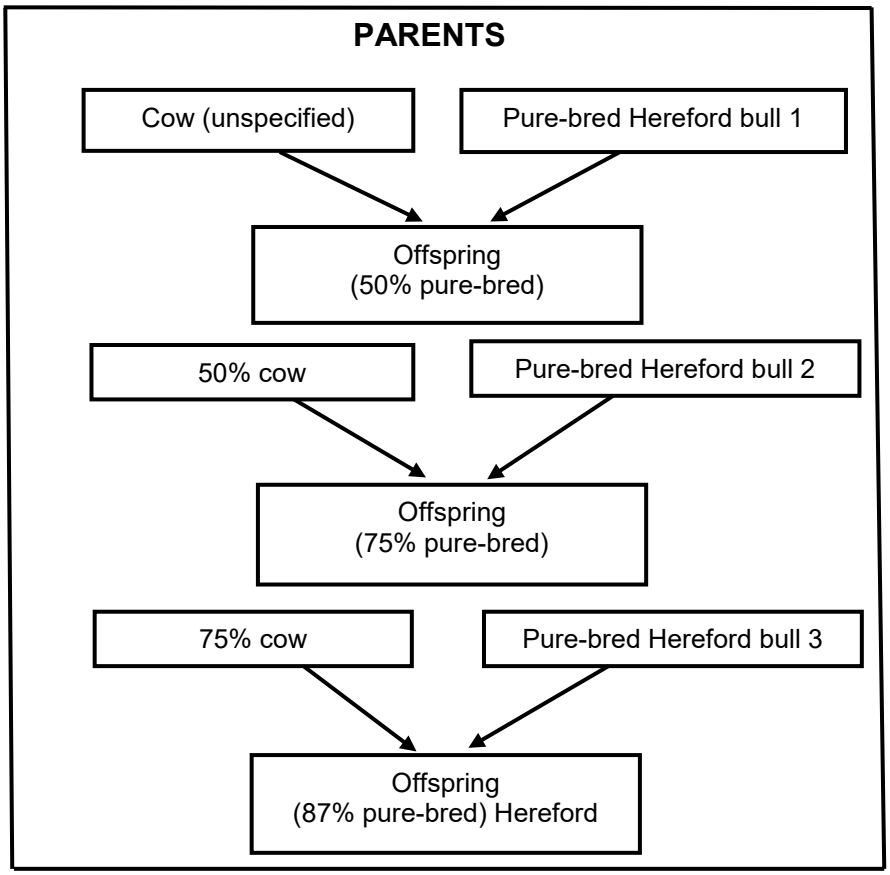
4.5.1 Name the phenomenon referred to above. (1)

4.5.2 Give ONE genetic cause of the phenomenon in QUESTION 4.5.1. (1)

4.5.3 Explain the following statement:

The phenomenon is the foundation for selection and breeding in agriculture. (2)

4.6 The schematic representation below shows a breeding system used to improve a herd.




4.6.1 Identify the type of breeding system illustrated above. (1)

4.6.2 Indicate the number of parent generations needed to develop a breed with 87% characteristics of a Hereford. (1)

4.6.3 Deduce, from the schematic representation, ONE disadvantage of the breeding system in QUESTION 4.6.1. (1)

4.6.4 Indicate ONE breeding system which involves related animals that animal breeders can use. (1)

4.7 The table below shows the heritability percentage of different characteristics of Bonsmara cattle and Boer goats.

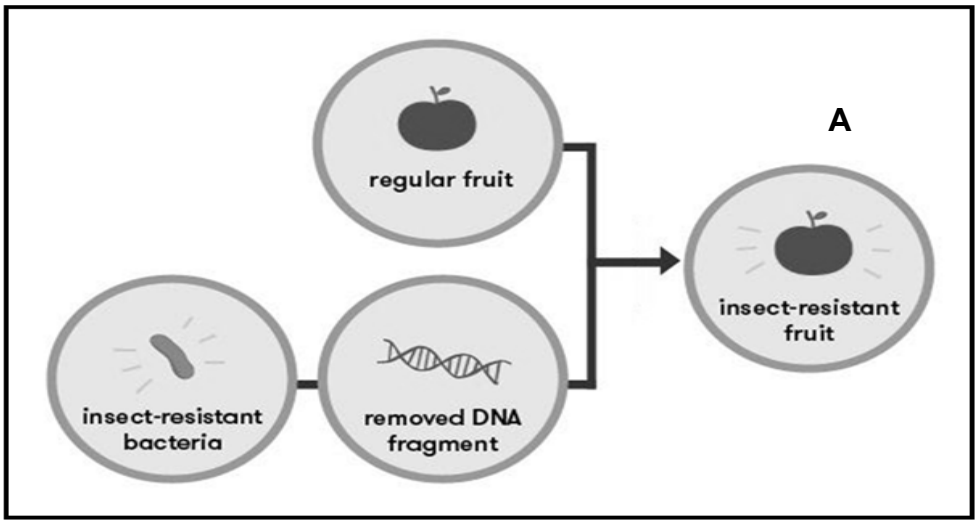
| FARM ANIMAL | CHARACTERISTIC | HERITABILITY (%) |
|---|---|---|
| Bonsmara | Birth weight | 38 |
| | Post-weaning weight | 30 |
| | Meat tenderness | 80 |
| | Lean meat | 38 |
| Boer goat | Birth weight | 48 |
| | Post-weaning weight | 70 |
| | Lean meat | 45 |
| | Fleece weight | 12 |

4.7.1 Identify a characteristic that the Boer-goat farmer will mostly NOT consider when selecting animals for breeding purposes. (1)

4.7.2 Explain the effectiveness of selecting Bonsmara for meat tenderness in improving the herd. (2)

4.7.3 Name the type of selection that the farmer can use when choosing a Boer goat for post-weaning weight. (1)

4.8 The diagram below illustrates a process used in plant improvement.




4.8.1 Identify the process of plant improvement used in the diagram above. (1)

4.8.2 Name the technique used to improve the fruit quality in the diagram above. (1)

4.8.3 Indicate the purpose of using the process illustrated in the diagram above. (1)

4.8.4 Name ONE other use of the process in QUESTION 4.8.1. (1)

4.8.5 State ONE potential health risk of organism **A**. (1)

**[35]**

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

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