Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
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Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2026

AGRICULTURAL SCIENCES P2

MARKS: **150**

TIME: **2½ hours**

This question paper consists of 17 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.

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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 … is found on the demand side of an agribusiness value chain.

A Marketing
B Manufacturing
C Processing
D Production and efficiency

1.1.2 The practice of putting labels on products to promote them as environmentally friendly:

A Green labelling
B Organic marketing
C Eco-labelling
D Sustainable marketing

1.1.3 The following are reasons why agricultural products are price inelastic in terms of supply:

(i) Long production period
(ii) Availability of substitutes
(iii) Perishability of most agricultural products
(iv) Seasonal production of agricultural produce

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 Marketing cost along the marketing chain include …

A storage and recreational facilities cost.
B taxes, production cost and commissions.
C incentives and education cost.
D entertainment cost and maintenance costs.

1.1.5 … is an example of external forces affecting farm businesses.

A Workers competency
B Poor cash flow
C Bad reputation
D Increased VAT

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1.1.6 Improving environmental conditions of workers on farms include all these, EXCEPT …

A providing farm products at a reduced price.
B giving adequate leave.
C providing water and food.
D providing better housing.

1.1.7 The type of farm worker who is employed to repair paddock fence:

A Permanent worker
B Casual worker
C Full-time worker
D Seasonal worker

1.1.8 A type of credit with a repayment period of more than 10 years:

A Medium term
B Fixed term
C Long term
D Short term

1.1.9 The following are the main types of gene mutation:

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

Choose the CORRECT combination:

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

1.1.10 ONE of the following is an example of non-related breeding systems.

A Back crossing
B Inbreeding
C Upgrading
D Line breeding

(10 x 2) (20)

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1.2 Choose a term/phrase from COLUMN B that matches a description in COLUMN A. Write only the letter (A–I) 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	The quantity of products required exceeds the quantity offered to the market	A	recessive
1.2.2	A marketing approach that focuses on the needs of only a small portion of the mainstream consumers	B	overhead
1.2.3	An asset register where farm implements are recorded	C	multi-segment
1.2.4	The costs that are not assigned to one particular enterprise	D	niche
1.2.5	Alleles that are only expressed when they are homozygous	E	shortage
		F	multiple alleles
		G	inventory
		H	surplus
		I	fixed

(5 x 2) (10)

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

1.3.1 The sequence of stages involved in transferring produce from the farm to the consumer.

1.3.2 The payment governed by Basic Conditions of Employment Act given to an employee for their work or service.

1.3.3 The unusual ability of an individual to transmit its characteristics to its offspring.

1.3.4 A trait associated with a gene that is carried only by the male or female parent.

1.3.5 A statistical estimate that measures the proportion of variation attributed to genetic differences among individuals.

(5 x 2) (10)

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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 A manager recognise business opportunities and is willing to take the risk of starting a business.

1.4.2 The decrease in value of an asset over time due to wear and tear is called degradation.

1.4.3 Prepotency is the phenomenon where offspring from two different breeds exhibit greater traits than either parents.

1.4.4 Biometrics is how much better or less than average of an individual will be for a particular trait.

1.4.5 A syringe is an apparatus used to fire genes of interest into the plant.

(5 x 1) (5)

TOTAL SECTION A: 45

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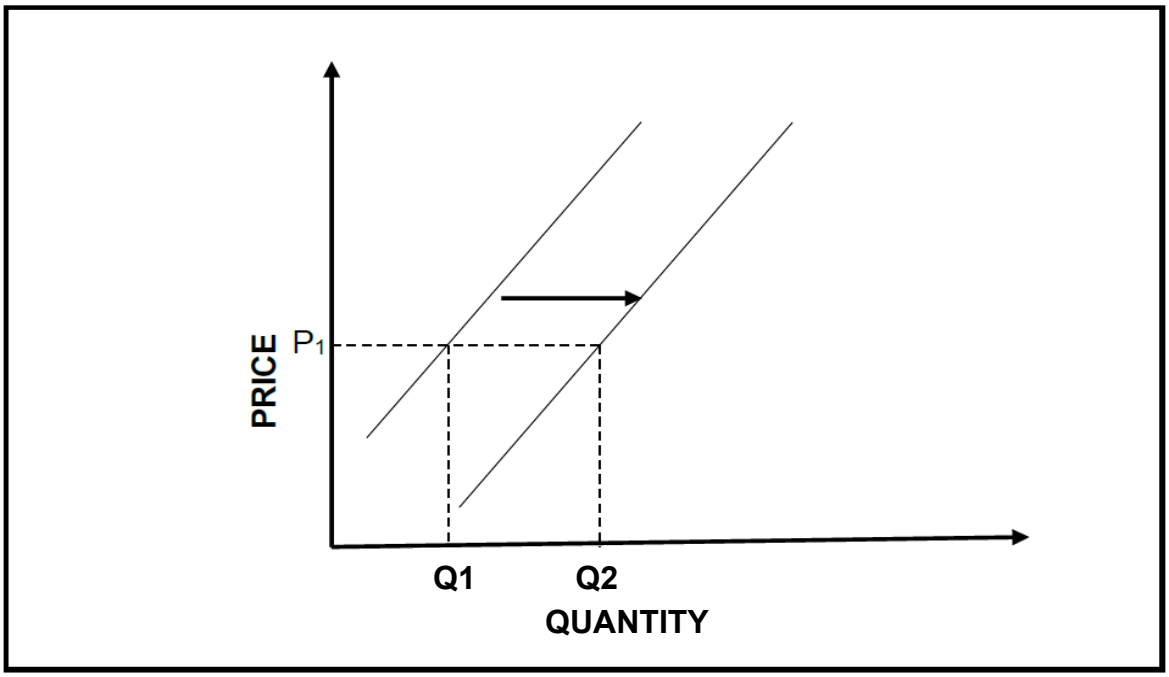
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SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

Start this question on a NEW page.

2.1 The graph below shows how various factors other than price, influence supply and cause the whole supply curve to shift.



2.1.1 State whether the shift shown by the graph above indicates an increase or a decrease in quantity supplied. (1)

2.1.2 Briefly explain how EACH of the following factors below will cause the shift indicated by the graph above:

(a) Production costs (2)

(b) Technology (2)

2.1.3 Deduce the possible effect of the shift shown in the graph above to the equilibrium price assuming demand remains constant. (1)

2.1.4 Describe why the hypothetical supply curve typically slopes upward from left to the right. (2)

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2.2 The picture below shows challenges that onion farmers face with the marketing of their produce.



2.2.1 Deduce any TWO factors shown from the picture above that could hamper the marketing of onions. (2)

2.2.2 State TWO marketing functions that can be applied by the onion farmers to deal with the problems identified in QUESTION 2.2.1 above. (2)

2.2.3 Differentiate between the two buyers *retailer* and *broker*. (2)

2.3 A farmer who has a marketing contract has a secured and predictable market because the produce has a secured destination before the production process begin. Contract marketing eliminates the involvement of a middleman.

2.3.1 Identify a marketing system related to the marketing channel in the passage above. (1)

2.3.2 Give TWO advantages of contract marketing channel suggested in the passage above. (2)

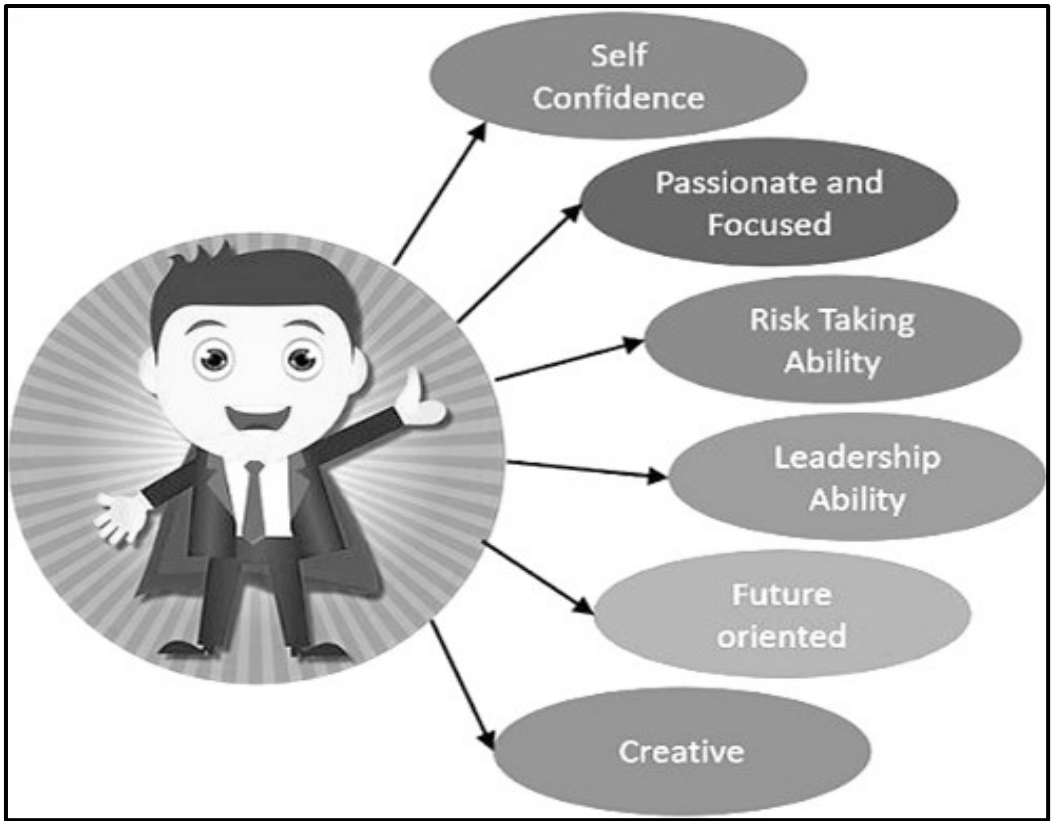
2.3.3 State TWO disadvantages of contractual marketing channel. (2)

2.3.4 Explain why the involvement of middlemen has some challenges to the producer. (2)

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2.4 Study the illustration below about success factors of an entrepreneur and answer the questions that follow.



Match the success factors in the illustration above with the following descriptions:

(a) Entrepreneurs often come up with new ways to generate ideas

(b) The entrepreneur does not ask questions whether they can succeed but trust in their competence

(c) Ability to get other team members to believe in the business idea and guide them

(d) They genuinely love their work and always strive to reach set goals (4)

2.5 A business plan is like a road map that provides direction for the business.

2.5.1 Define the concept *business plan.* (2)

2.5.2 Give TWO aspects that should be included in EACH of the components of a business plan below:

(a) Marketing plan (2)

(b) Financial plan (2)

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2.5.3 State TWO reasons why it is crucial to set realistic goals when drawing up a business plan. (2)

2.5.4 State the component of a SWOT analysis that is explained by the following sentences:

(a) Attributes of a business that can hinder goal attainment (1)

(b) External positive factors that can benefit the business (1)

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QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

3.1 Land is an area of ground where agricultural activities are executed to produce food for the nation.

3.1.1 Explain the meaning of EACH of the following economic characteristics of land:

(a) Agricultural land has inflexible production cycle (2)

(b) Land is subject to the law of diminishing returns (2)

3.1.2 State TWO economic functions of land. (2)

3.1.3 Suggest a method farmers can use to improve the productivity of land under each conditions:

(a) Regions where water is scarce (1)

(b) Soil erosion causing lot of gullies in the arable land. (1)

3.2 The box below shows different types of labour in agriculture.

permanent; seasonal; casual

3.2.1 Identify the type of labour from the information box above that is in line with EACH of the descriptions below:

(a) Perform tasks that are non-repetitive (1)

(b) Employed to perform farming operations on a long-term basis (1)

(c) Needed mainly during fluctuating demands like planting and harvesting (1)

3.2.2 Name the document that is signed between the workers and their employers to avoid exploitation. (1)

3.2.3 Deduce the piece of legislation that will be applicable under EACH of the following condition:

(a) Clarifies hours of work and meal intervals (1)

(b) Gives workers' rights to strike (1)

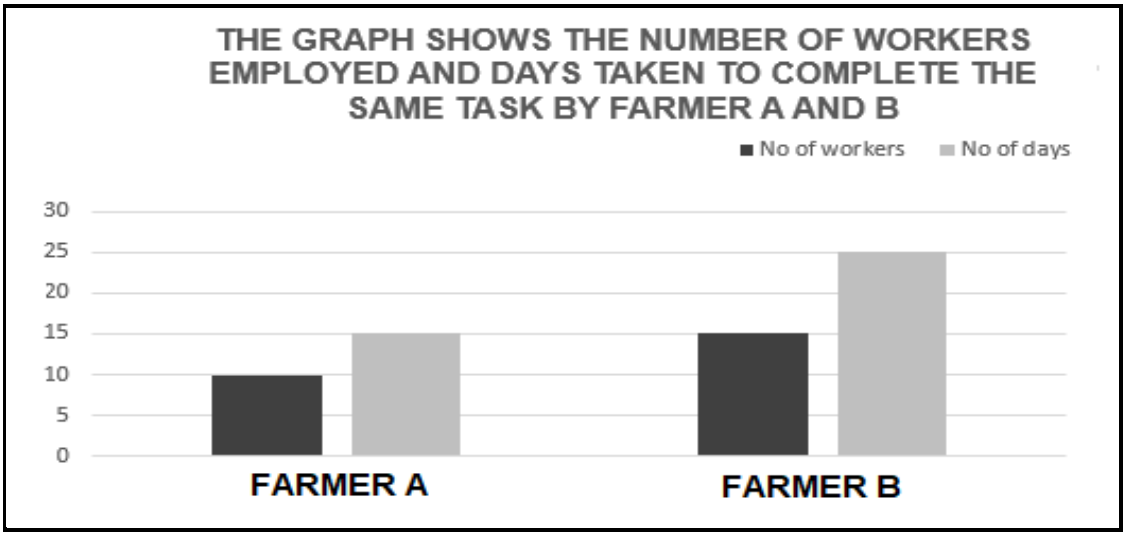
(c) Applies to employees who are disabled as a result of a workplace accident (1)

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3.3 An agricultural economist did research about the performance of farm workers from two different farms who were performing the same task. The findings are presented in the bar graph below. It was noted that the workforce for FARMER **A** were economically motivated while the workforce for FARMER **B** were economically demotivated.

Study the trend on the bar graph below and answer the questions that follow.



3.3.1 Identify TWO advantages of having motivated workers from the research above. (2)

3.3.2 Suggest TWO economic measures that FARMER **B** can implement to motivate workers. (2)

3.3.3 Formulate ONE hypothesis that can guide this research. (1)

3.4 The data in the table below shows the total costs incurred and total income obtained from different farm operations during an accounting period.

FARM OPERATIONS	TOTAL COST	TOTAL INCOME
Maize production	R40 000	R60 000
Sheep farming	R30 000	R25 000
Piggery	R20 000	R30 000
Broiler	R10 000	R15 000

3.4.1 Use the data in the table above and draw a bar graph comparing the total cost and income of livestock farm operations. (6)

3.4.2 Identify the farm operation from the table above that is NOT viable. (1)

3.4.3 Justify your answer to QUESTION 3.4.2. (1)

3.4.4 Give TWO problems of capital. (2)

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3.5 Geopolitics has caused high volatility of maize prices at global markets and this has caused maize production farmers to deduce various means to deal with different sources of risk.

3.5.1 State THREE main source of risk that affect agricultural production. (3)

3.5.2 Identify the risk management strategy described in the statements below:

(a) The cost of business uncertainties is shared amongst several partners (1)

(b) Spreading the impact of risks by investing in different farm operations (1)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

Start this question on a NEW page.

4.1 In Dorper sheep, the allele for black head is dominant (**B**) over the gene for white head. A heterozygous black headed ram escaped from his pen and serviced an ewe with unknown genotype. The phenotypic ratio of this cross showed that three black headed offspring and one white headed offspring were produced.

4.1.1 Determine the genotype of the unknown ewe. (1)

4.1.2 Name the type of the cross described in the scenario above. (1)

4.1.3 Motivate your answer in QUESTION 4.1.2 above. (1)

4.1.4 Use a Punnet square only to determine the genotype of the F_1 offspring from the cross in the scenario above. (4)

4.1.5 State the genotypic ratio of the F_1 offspring. (2)

4.1.6 Identify Mendel's Law of Inheritance applicable with EACH of the statements given below:

(a) Individuals possess a pair of alleles made up of one allele received from each parent for a particular trait (1)

(b) The genes of one trait are inherited independently of one another trait (1)

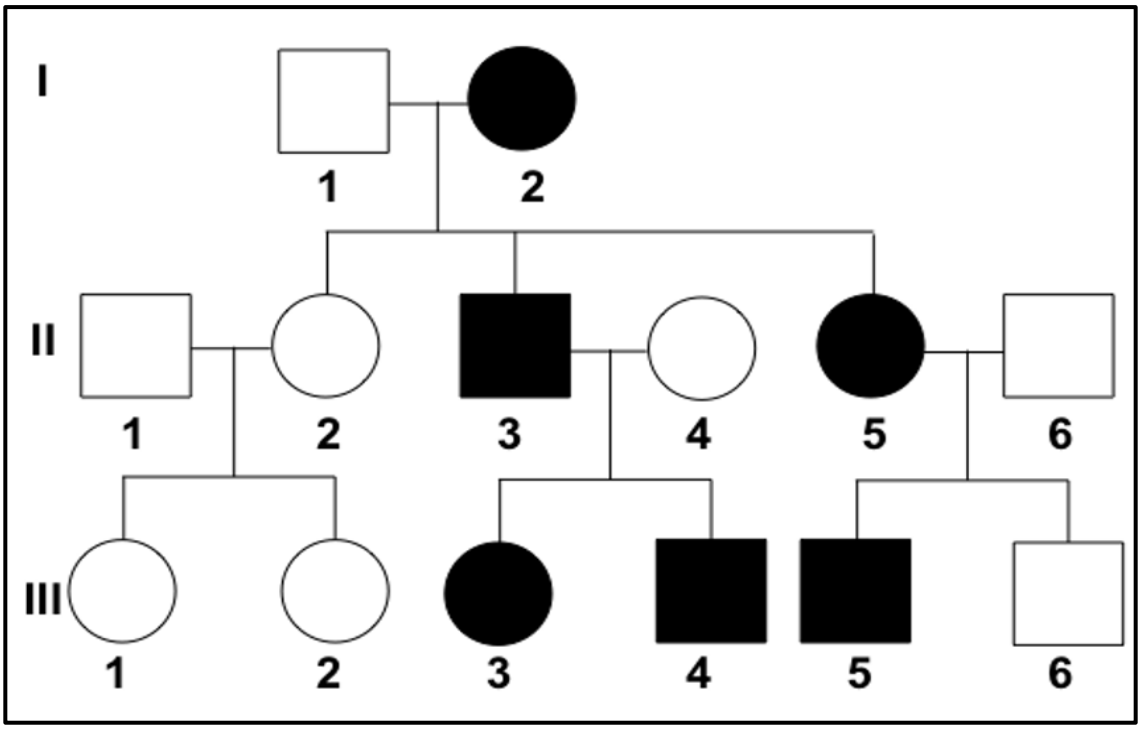
4.1.7 Differentiate between *incomplete dominance* and *co-dominance.* (2)

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4.2 The pedigree diagram below represents the transmission of water belly, which is a genetic disorder of chickens that occurs when broilers are bred for rapid weight gain. A solid black square or circle represents the homozygous condition for water belly.

Use **AA** for normal chicken and **aa** for water belly chickens and answer the questions that follow.



4.2.1 Write down the genotype of the following chickens:

(a) (I) **1** (1)

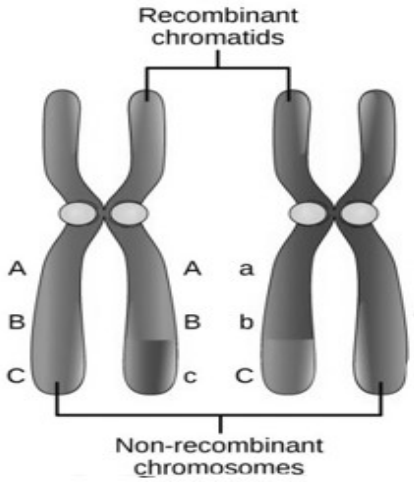
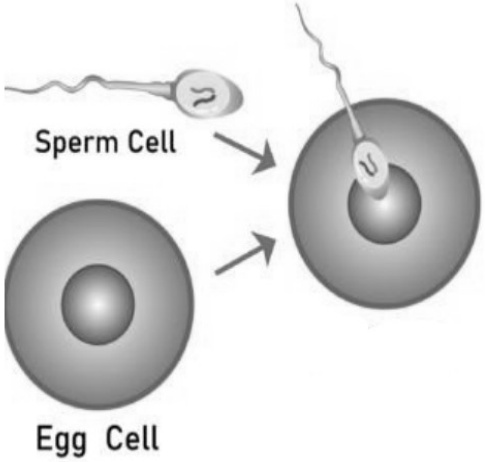
(b) (II) **3** (1)

4.2.2 Justify your answer to QUESTION 4.2.1 above. (2)

4.2.3 Determine whether water belly is a dominant or recessive genetic disorder. Motivate your answer. (2)

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4.3 Variation is key for natural selection and diversity. Study the pictures below and answer the questions that follow.

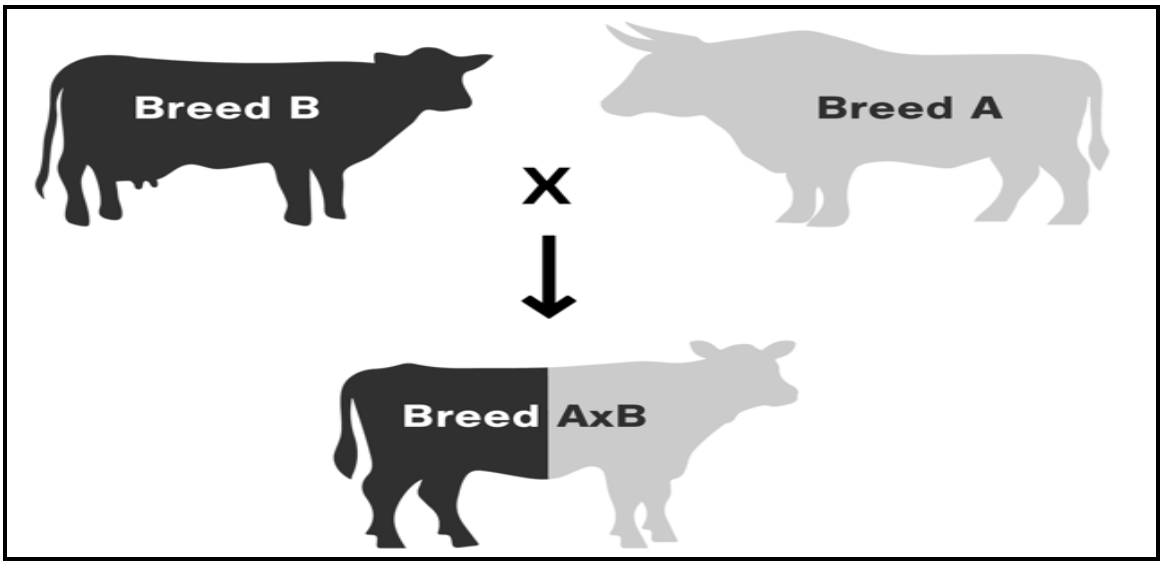
PICTURE A	PICTURE B
	

4.3.1 Identify TWO internal causes of variation represented by PICTURE **A** and **B** above. (2)

4.3.2 Give TWO climatic cause of variation. (2)

4.3.3 State the selection method that requires verifiable records of the ancestral linage. (1)

4.4 Study the picture below and answer the questions that follow.



4.4.1 Identify the breeding system shown in the picture above. (1)

4.4.2 Give THREE advantages of the breeding system mentioned in QUESTION 4.4.1 above. (3)

4.4.3 Give TWO reasons why animal breeders do not recommend mating of closely related individuals. (2)

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4.5 Identify the genetic modification technique associated with EACH of the following descriptions:

4.5.1 The selected DNA is injected into a fertilised ovum (1)

4.5.2 Small bubbles of fats are used as carriers of genes of interest (1)

4.5.3 Targeted cells are immersed in a special solution and the electric current is used to create pores in the cell membrane (1)

4.6 Give TWO potential environmental hazards of using genetic modification. (2)
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TOTAL SECTION B: 105
GRAND TOTAL: 150

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