Find Plenty of Free Study Resources at www.studypapers.co.za

Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2022

AGRICULTURAL SCIENCES P2

MARKS: **150**

TIME: **2½ hours**

This question paper consists of 12 pages.

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

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.

Copyright reserved

Downloaded from www.studypapers.co.za

Visit Every Free Study Resources at www.studypapers.co.za

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct 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 a marketing approach that has the greatest reach.

A Fresh produce markets
B Farm gate marketing
C Internet marketing
D Stock sales

1.1.2 … price fixing occurs in a market that has many sellers, but only one buyer.

A Monopsony
B Monopoly
C Oligopoly
D Co-operative

1.1.3 The following are principles of agricultural co-operatives:

(i) Pooling of produce for marketing
(ii) Risk is shared by all members
(iii) An Agri-co-op has members as shareholders, not owners
(iv) Democratic member control

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 The following are internal forces affecting a farm business.

(i) Competence of management
(ii) Political forces
(iii) Latest equipment
(iv) Cash flow

Choose the CORRECT combination:

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

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

1.1.5 The … budget will be ideal to estimate the profitability of tomato production on a farm.

A cash flow
B partial
C enterprise
D whole farm

1.1.6 … is the management principle which involves evaluating how well goals are achieved, improving performance and taking action.

A Organising
B Planning
C Controlling
D Leading

1.1.7 A list of all assets on a farm is called a(n) …

A balance sheet.
B inventory.
C cash analysis book.
D budget.

1.1.8 … is NOT an example of outbreeding.

A Species crossing
B Line breeding
C Upgrading
D Cross breeding

1.1.9 If two parents are heterozygous for a genetically inherited dominant trait, the probability that they will have an offspring together that has this trait in its phenotype will be …

A 25%.
B 50%.
C 75%.
D 100%.

1.1.10 Scientists have found out that when a true breeding red plant is crossed with a true breeding blue plant, the resulting offspring are purple. The most likely explanation for this result is …

A red is the dominant allele.
B blue is the dominant allele.
C codominance.
D incomplete dominance. (10 x 2) (20)

Copyright reserved

Downloaded from www.studypapers.co.za

Find Every Of Free Study Resources at www.studypapers.co.za

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

COLUMN A		COLUMN B	
1.2.1	The sequence of stages involved in transferring produce from the farm to the consumer	A	Market equilibrium
1.2.2	The price at which the supply of goods is equal to demand	B	Recessive
1.2.3	Skills that allow a manager to reflect on changes in the industry and develop strategies to address them	C	Conceptual
1.2.4	Alleles that are only expressed when they are homozygous	D	Marketing chain
1.2.5	Recurrence of traits of an ancestor in subsequent generations	E	Dominant
		F	Atavism
		G	Equilibrium price
		H	Planning

(5 x 2) (10)

1.3 Give ONE word/term 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 Mental and physical efforts performed in expectation of remuneration

1.3.2 The activity of setting up a business and taking on financial risks in the hope of profit

1.3.3 A marketing approach that focuses on a unique target market

1.3.4 A physical or chemical agent that permanently changes genetic material

1.3.5 The unusual ability of an individual to transmit its characteristics to offspring

(5 x 2) (10)

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

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 Selling is a consumer driven approach in which consumer satisfaction is important.

1.4.2 Variable costs are general farm costs that cannot be attributed to a particular enterprise.

1.4.3 Assets refer to money and items with monetary value that can be used to produce other goods and generate profit.

1.4.4 The mission is the long-term aim of your business.

1.4.5 Sex linkage is the inheritance pattern of a characteristic controlled by two or more genes.

(5 x 1) (5)

TOTAL SECTION A: 45

Copyright reserved

Downloaded from www.studypapers.co.za

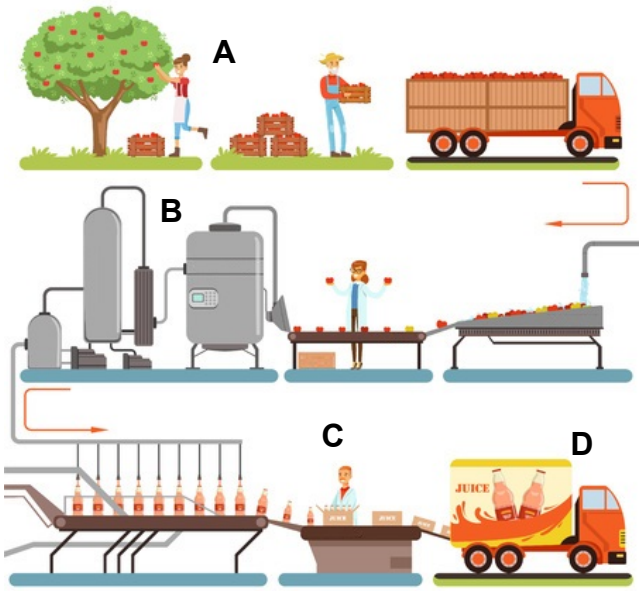
Find Entry of Free Study Resources at www.studypapers.co.za

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

Start this question on a NEW page.

2.1 The diagram below illustrates marketing functions.



2.1.1 Identify the marketing functions **B** and **C** illustrated above. (2)

2.1.2 Outline TWO roles of the marketing function **B** in the South African economy. (2)

2.1.3 Describe TWO environmentally sustainable guidelines followed when carrying out the marketing function **C**. (2)

2.1.4 Compare the value of the product at points **A** and **D** in the diagram above. (2)

2.2 The table below shows the supply of two products at different prices.

PRODUCT 1		PRODUCT 2	
PRICE (R)	SUPPLY	PRICE (R)	SUPPLY
10	5	10	5
20	15	20	10
30	25	30	15
40	35	40	20
50	45	50	25
60	55	60	30
70	65	70	35

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

2.2.1 Present the relationship between price and supply of PRODUCT 1 and PRODUCT 2 on a line graph. (6)

2.2.2 Identify the product that is price inelastic. (1)

2.2.3 Motivate the answer in QUESTION 2.2.2 above. (2)

2.2.4 Give TWO reasons why agricultural products generally take the shape of the product identified in QUESTION 2.2.2. (2)

2.3 The following are examples of marketing systems:

A – The government or other organisations oversee the market
B – The forces of demand and supply determine the price of commodities

2.3.1 Identify the marketing systems **A** and **B** described above. (2)

2.3.2 Identify the marketing system **A** or **B** that results in:

(a) More stable prices (1)

(b) Overproduction can lead to surpluses (1)

2.3.3 State TWO advantages of marketing system **A** to the consumer. (2)

2.3.4 Outline TWO options available to farmers to market their produce under marketing system **B**. (2)

2.4 When entrepreneurs want to start businesses, they need to draft a written document that describes in detail how a business defines its objectives and how it can achieve them.

2.4.1 Name the document described above. (1)

2.4.2 Give TWO reasons why it is important. (2)

2.4.3 Outline TWO common mistakes made when drafting the document in QUESTION 2.4.1. (2)

2.4.4 List THREE personal attributes that the entrepreneur above needs to possess for the business to be successful. (3)

[35]

Copyright reserved

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

QUESTION 3: PRODUCTION FACTORS

Start this question on a NEW page.

3.1 The following are some economic characteristics of land.

A – Urbanisation
B – Subject to the law of diminishing returns

3.1.1 Briefly explain each of the economic characteristics of land above. (4)

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 of the following circumstances:

(a) An area with erratic rainfall (1)

(b) Heavily eroded soil (1)

3.2 A citrus farmer employs the following groups of employees:

A Employees who are responsible for irrigation, pest control, pruning and general maintenance of orchards.
B Employees who are only employed during the harvesting season as determined by the ripening speed of the oranges.
C Employed to extend the fruit packing shed.

3.2.1 Classify the labour types above based on period of employment. (3)

3.2.2 Name the document that is signed between the employees above and their employer. (1)

3.2.3 Give TWO reasons to justify the use of the document mentioned in QUESTION 3.2.2. (2)

3.2.4 Deduce a piece of legislation that will be applicable under each of the following conditions.

(a) Farm worker **A** is retrenched as a result of low sales caused by the Covid-19 pandemic. (1)

(b) The farm owner contributes to the skills development fund. (1)

(c) One of the farm workers in category **A** contracted a disease due to spraying pesticides without a face mask. (1)

3.2.5 Suggest TWO strategies that can be used by the farmer above to retain labour. (2)

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

3.3 The table below shows an important financial record in farm business management.

ASSETS	AMOUNT (R)	LIABILITIES	AMOUNT (R)
Breeding stock	100 000	Accrued interest	285 000
Machinery and equipment	80 000	Principal due on farm debt	300 000
Vehicles	600 000		
Farmland	1 200 000		
Buildings and improvements	150 000		
TOTAL	……..		……..

3.3.1 Identify the financial record shown above. (1)

3.3.2 Identify ONE example of each of the following:

(a) Fixed capital (1)

(b) Movable capital (1)

3.3.3 Specify the type of credit required to finance each of the capital types in QUESTION 3.3.2. (2)

3.3.4 Use a formula to calculate the net worth of the business above. (4)

3.3.5 Comment on the viability of the business. (2)

3.4 Identify the risk management strategy described in the statements below.

3.4.1 Two or more crops are produced on a farm to reduce dependence on one crop. (1)

3.4.2 The ability to change plans over time as additional information is received. (1)

3.4.3 The cost and consequences of risk are shared amongst several stakeholders. (1)

3.5 Identify the principles of management required in each of the following situations:

3.5.1 The process of thinking regarding the activities required to achieve a desired goal. (1)

3.5.2 Putting a decision or plan into effect. (1)

[35]

Copyright reserved

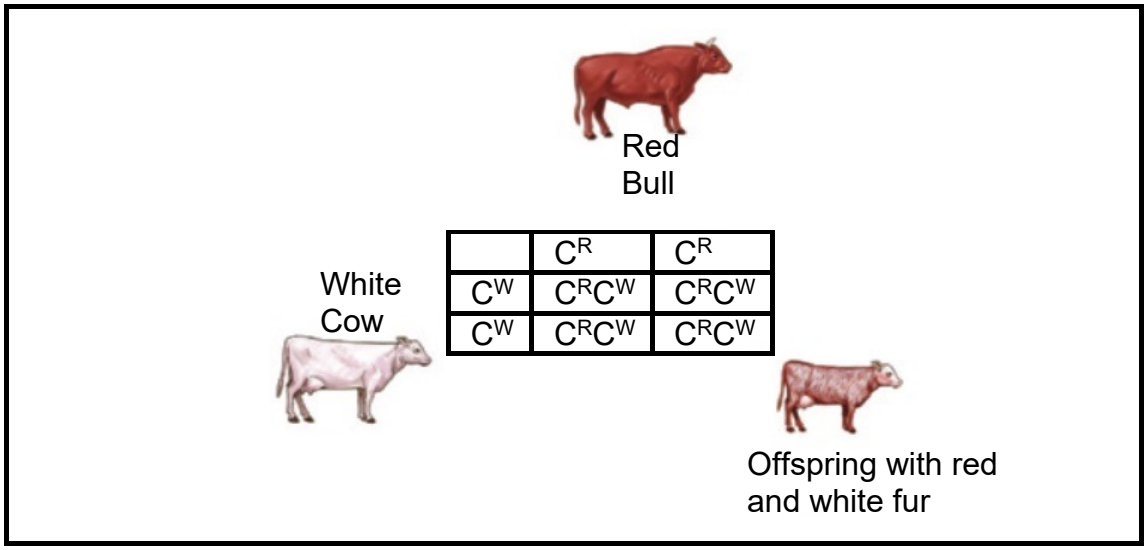
Downloaded from www.studypapers.co.za

Visit Study Free Study Resources at www.studypapers.co.za

QUESTION 4: BASIC AGRICULTURAL GENETICS

Start this question on a NEW page.

4.1 The diagram below shows the outcome of a genetic cross. Analyse and answer the questions that follow.



	C^R	C^R
C^W	C^RC^W	C^RC^W
C^W	C^RC^W	C^RC^W

4.1.1 Identify the mechanism of inheritance depicted in the diagram above. (1)

4.1.2 Motivate the answer to QUESTION 4.1.1. (2)

4.1.3 Use a punnet square to determine the genotype of the F_2-generation. (4)

4.1.4 Deduce the F_2 phenotypic ratio. (1)

4.1.5 Give any TWO other patterns of inheritance that lead to phenotypes that are different to those of Mendel. (2)

4.2 Agricultural genetic diversity is critical to provide a robust food security system capable of adapting to pest and environmental stressors. Genetic diversity allows agricultural plant and animal breeders to adapt to changing variables.

4.2.1 Define the term *variation*. (2)

4.2.2 Identify ONE advantage of variation from the passage above. (1)

4.2.3 Give TWO external causes of variation in plants. (2)

Copyright reserved

Downloaded from www.studypapers.co.za

Find Plenty of Free Study Resources at www.studypapers.co.za

4.3

Wild plant **A** population evolve to cope with changes in their environment.	Humans identify **B** desirable traits in plants and animals and take steps to enhance them.

4.3.1 Identify the selection types **A** and **B**. (2)

4.3.2 Give TWO methods of selection type **B**. (2)

4.3.3 Specify TWO requirements for characteristics used in selection type **B**. (2)

4.4 Identify the breeding method that is associated with each of the following characteristics:

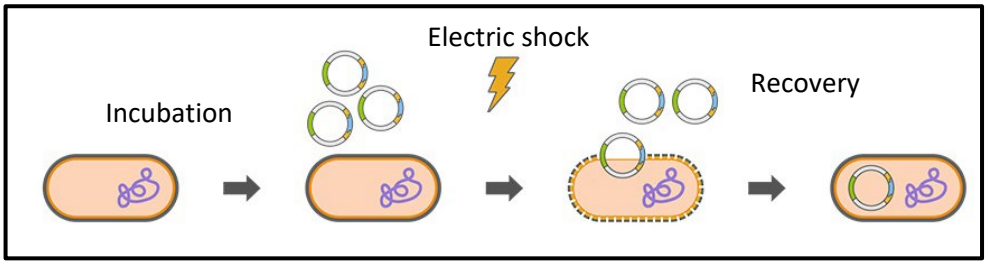
4.4.1 Heterosis (1)

4.4.2 Slow improvement after the third generation (1)

4.4.3 Expression of lethal alleles (1)

4.4.4 Results in sterile offspring (1)

4.5 The diagrams below show a technique used to genetically modify plants.



4.5.1 Identify the genetic modification technique shown above. (1)

4.5.2 Briefly describe how you arrived at your answer. (2)

4.5.3 Comment on the suitability of plant improvement methods such as the one above for use in African countries. (2)

4.5.4 Describe TWO aims of such methods. (2)

4.5.5 Classify the potential risks associated with the plant improvement methods like the one depicted above into THREE. (3)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150

Copyright reserved
Downloaded from www.studypapers.co.za