



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

2022

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 11 pages.

SECTION A**QUESTION 1**

1.1	1.1.1	D ✓✓	(10 x 2)	(20)
	1.1.2	D ✓✓		
	1.1.3	A ✓✓		
	1.1.4	C ✓✓		
	1.1.5	B ✓✓		
	1.1.6	B ✓✓		
	1.1.7	A ✓✓		
	1.1.8	B ✓✓		
	1.1.9	C ✓✓		
	1.1.10	C ✓✓		
1.2	1.2.1	G ✓✓	(5 x 2)	(10)
	1.2.2	A ✓✓		
	1.2.3	H ✓✓		
	1.2.4	C ✓✓		
	1.2.5	D ✓✓		
1.3	1.3.1	Price elasticity ✓✓	(5 x 2)	(10)
	1.3.2	Management ✓✓		
	1.3.3	Heredity ✓✓		
	1.3.4	Biometrics ✓✓		
	1.3.5	Progeny selection ✓✓		
1.4	1.4.1	SWOT analysis ✓	(5 x 1)	(5)
	1.4.2	Labour ✓		
	1.4.3	Epistasis ✓		
	1.4.4	Mutation ✓		
	1.4.5	Chromosome ✓		
TOTAL SECTION A:			45	

SECTION B**QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing functions****2.1.1 The main functions of marketing**

- B** - Storage ✓ (1)
D - Transportation ✓ (1)

2.1.2 TWO guidelines for packaging

- Product identification ✓
- Recyclability/biodegradability ✓
- Containment/easy handling ✓
- Protection ✓
- Should improve shelf life ✓
- Health risk/free from chemicals/cleanliness ✓
- Appeal to the target market ✓ (Any 2) (2)

2.1.3 TWO advantages of processing to the consumer

- Provides job opportunities ✓
- Easy to handle the product/convenience ✓
- Can buy farm products and keep for longer at home ✓
- Product availability in all seasons/ensures food security ✓
- Provides quality improved products ✓
- Makes the products more appealing ✓ (Any 2) (2)

2.2 Demand and supply curves**2.2.1 The curves of demand and supply**

- (a) Demand** - H (F E D) ✓ (1)
(b) Supply - G (A B C) ✓ (1)

2.2.2 Reason of the demand curve

- The higher the price of a product ✓ the lower the demand ✓
- The lower the price of a product ✓ the higher the demand ✓
- There is an inverse relationship ✓ between price and demand ✓
- Has a negative/downward slope ✓ to the right ✓ (Any 1) (2)

2.2.3 TWO factors influencing demand of agricultural products

- Price of the product/price expectations ✓
- Quality of the product ✓
- Consumer taste and preferences ✓
- Fashion/advertising ✓
- Change in consumer income ✓
- Number of consumers ✓
- Socio-economic factors/buying power ✓
- Legislation ✓
- Research ✓
- Price of substitutes/competitive or complementary products ✓
- Festive season ✓
- Usefulness of the product ✓ (Any 2) (2)

2.2.4 The relationship between price and supply

- The higher the price ✓ the more the quantity supplied ✓
- The lower the price ✓ the lower the quantity supplied ✓ (Any 1) (2)

2.3 Entrepreneurial success factors**2.3.1 Identification of the letters**

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

2.4 Marketing approaches**2.4.1 Identification of the types of marketing approaches**

- A - Mass marketing ✓ (1)
- B - Multi-segment marketing ✓ (1)
- C - Niche marketing ✓ (1)

2.5 Marketing**2.5.1 The marketing process**

- Agri-business/marketing/supply-demand chain ✓ (1)

2.5.2 TWO costs influencing the high price at stage 4

- Processing costs ✓
- Distribution/transportation costs ✓ (2)

2.5.3 TWO factors hampering marketing of the product at stage 3

- Accidents/delays ✓
- Poor infrastructure/bad roads ✓
- Theft ✓
- Perishability/spoilage/damage of the product ✓
- High cost of fuel ✓ (Any 2) (2)

2.5.4 ONE way to streamline and improve agri-business chain

- Improve road infrastructure ✓
- Improve access to market information ✓
- Provide storage facilities ✓
- Provide access to finance ✓
- Use cold storage and refrigerated transport ✓
- Grading/standardisation of products to facilitate marketing/pricing ✓
- Processing products close to where they are produced ✓
- Combining loads with other producers ✓

(Any 1) (1)

2.6 Marketing channel**2.6.1 TWO advantages of fresh produce market**

- Large volumes can be sold ✓
- Farmer takes advantage of higher price in times of short supply ✓
- Farmer can employ an agent to perform the task of marketing ✓

(Any 2) (2)

2.6.2 Justification of an agent increasing the marketing cost

The farmer pays the commission to the agent ✓

(1)

2.6.3 Indication of the marketing system

Free marketing ✓

(1)

2.7 TWO roles of legislation in agricultural marketing

- Increases market access to all participants ✓
- Controls sale and export of perishable products ✓
- Sets and maintains national standards ✓
- Promotes food safety ✓
- Regulates market agents and improve their functioning ✓
- Promotes a fair accessible and sustainable market place for consumer products and services ✓
- Prevents unfair marketing and business practices ✓

(Any 2) (2)

2.8 Business plan**2.8.1 Component of a business plan showing ownership of a business**

Title page ✓

(1)

2.8.2 TWO reasons for drawing up a business plan

- Document the business idea ✓
- Test the feasibility and economic viability of a business ✓
- Determine the financial needs of the business ✓
- Secure funding for the business ✓
- Guide daily operations ✓
- Ensure effective business management ✓
- Allow the farmer to foresee problems ✓
- Gain knowledge about marketing opportunities/competitors ✓
- Reposition the business to deal with changes in the market ✓

(Any 2)

(2)

[35]**QUESTION 3: PRODUCTION FACTORS****3.1 Land****3.1.1 The economic characteristic of land**

The law of diminishing returns ✓

(1)

3.1.2 Implication of the law of diminishing returns

- Output will initially increase at an increasing rate with increase of input ✓
- A further increase in input will result in increased output at a decreasing rate ✓

(2)

3.1.3 Output response to the inputs as it increases from

- **5 to 10:** An input of 5 units resulted in an output of 10 units/ output increases at an increasing rate with an increase in inputs ✓
- **10 to 15:** An input of 5 units resulted in an output of 5 units/ output increases at a decreasing rate with an increase in inputs ✓

(1)

(1)

3.1.4 TWO measures to improve productivity of land

- Development of disease resistant cultivars/breeds ✓
- The use of fertilisers/manure/compost ✓
- Appropriate use of land/better care of agricultural land ✓
- Adapting to/use of scientific methods/technology/precision/organic farming/correct cultivation methods/crop rotation ✓
- Consolidation of small/uneconomic farming units ✓
- Restoring land potential/resting land/correct land utilisation ✓
- Responsible application of chemicals/pesticides/herbicides ✓
- Mechanisation ✓
- Adapting to appropriate policies/legislation ✓
- Water provision/management/irrigation ✓

(Any 2)

(2)

- 3.2 Risk management strategy**
- 3.2.1 Identification of the risk management strategy**
Diversification ✓ (1)
- 3.2.2 Reason**
There are different production enterprises on the farm ✓ (1)
- 3.2.3 Risk management strategy when production costs is distributed equally**
Risk-sharing ✓ (1)
- 3.2.4 The source of risk**
Production risk ✓
Technical risk ✓ (Any 1) (1)
- 3.2.5 TWO management principles the farm manager can employ**
- Planning ✓
 - Organizing and coordination ✓
 - Implementation ✓
 - Control/monitoring ✓ (Any 2) (2)
- 3.3 Contract between a farmer and a farm worker**
- 3.3.1 Definition of a contract**
A legally binding document ✓ between the employer and employee ✓ (2)
- 3.3.2 Indication of the type of farm worker**
Permanent/fulltime worker ✓ (1)
- 3.3.3 Reason**
The contract will terminate at retirement ✓ (1)
- 3.3.4 Labour legislation**
- (a) Number 7 - Basic Conditions of Employment Act/BCEA**
(Act No. 75 of 1997) ✓ (1)
- (b) Number 8 - Occupational Health and Safety Act/OHSA**
(Act No. 85 of 1993)/ ✓ (1)
- 3.3.5 TWO reasons that lead to the movement of farm labourers**
- Poor working conditions/less leave days ✓
 - Low wages/salaries ✓
 - Longer working hours/ ✓
 - Lack of protective clothing ✓ (Any 2) (2)
- 3.4 Capital**
- 3.4.1 Identification of the types of capital**
- A - Movable** ✓ (1)
- B - Fixed** ✓ (1)
- C - Working/floating/production** ✓ (1)

3.4.2 **TWO methods to create more capital**

- Production/own capital ✓
- Savings ✓
- Credit/loans ✓
- Grants ✓

(Any 2) (2)

3.4.3 **TWO problems associated with capital**

- Scarcity/difficult access to capital ✓
- Expensive/high cost/interest rates ✓
- Depreciation ✓
- Law of diminishing returns ✓
- Undercapitalisation ✓
- Overcapitalisation ✓
- High risk ✓

(Any 2) (2)

3.5 **Balance sheet**3.5.1 **Name of the financial statement**

Balance sheet ✓

(1)

3.5.2 **Identification of A from the financial statement**

Current/short term assets ✓

(1)

3.5.3 **Calculation of B**

- $R\ 55\ 000 + R\ 340\ 000 + R\ 570\ 000$ ✓
- $= R\ 965\ 000$ ✓

(2)

3.5.4 **Calculation of the net worth**

- Net worth = Total assets – Total liabilities ✓
- $= R\ 1\ 861\ 000 - R\ 965\ 000$ ✓
- $= R\ 896\ 000$ ✓

(3)

[35]**QUESTION 4: BASIC AGRICULTURAL GENETICS**4.1 **Line breeding flow chart**4.1.1 **TWO common ancestors of individuals A and B**

- 1 ✓
- 4 ✓
- 5 ✓

(Any 2) (2)

4.1.2 **The relationship between individuals 2 and 3**

Siblings/brothers and sisters ✓

(1)

4.1.3 **TWO advantages of line breeding**

- Leads to stronger prepotency in the progeny ✓
- Undesirable recessive characteristics can be identified/ uncovered for elimination from the herd ✓
- Favourable characteristics of an outstanding ancestor are quickly laid down in the progeny ✓
- Progeny display a high degree of homozygosity ✓ (Any 2) (2)

4.2 **Pedigree diagram**4.2.1 **The number of the generations**

3 ✓ (1)

4.2.2 **The number of white males**

4 ✓ (1)

4.2.3 **Genotypes of the individuals**

(a) 1 - Dd ✓ (1)

(b) 5 - dd ✓ (1)

4.2.4 **Indication of homozygous or heterozygous**

(a) 6 - Heterozygous ✓ (1)

(b) 10 - Homozygous ✓ (1)

4.2.5 **The reason to support the answer to QUESTION 4.2.4(b)**

- The offspring is white in colour which is recessive ✓ and can only be expressed in homozygous condition ✓
- White recessive ✓ pure breed ✓ (Any 1) (2)

4.3 **The sex chromosomes**4.3.1 **Male cattle - XY** ✓ (1)4.3.2 **Female cattle - XX** ✓ (1)4.4 **Punnet square**4.4.1 **Punnet square**

Gametes	B	b
b	Bb	bb
b	Bb	bb

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- Correct gametes of parent one ✓
- Correct gametes of parent two ✓
- Correct genotypes of the offspring ✓
- Punnet Square (populated with gametes and offspring) ✓ (4)

4.5 **Variation and selection**4.5.1 **Type of selection**

Artificial selection ✓

(1)

4.5.2 **ONE animal production characteristic used by farmers**

- Growth ✓
- Health ✓
- Fertility ✓

(Any 1) (1)

4.5.3 **How to improve each of the following****(a) Genetic variation**

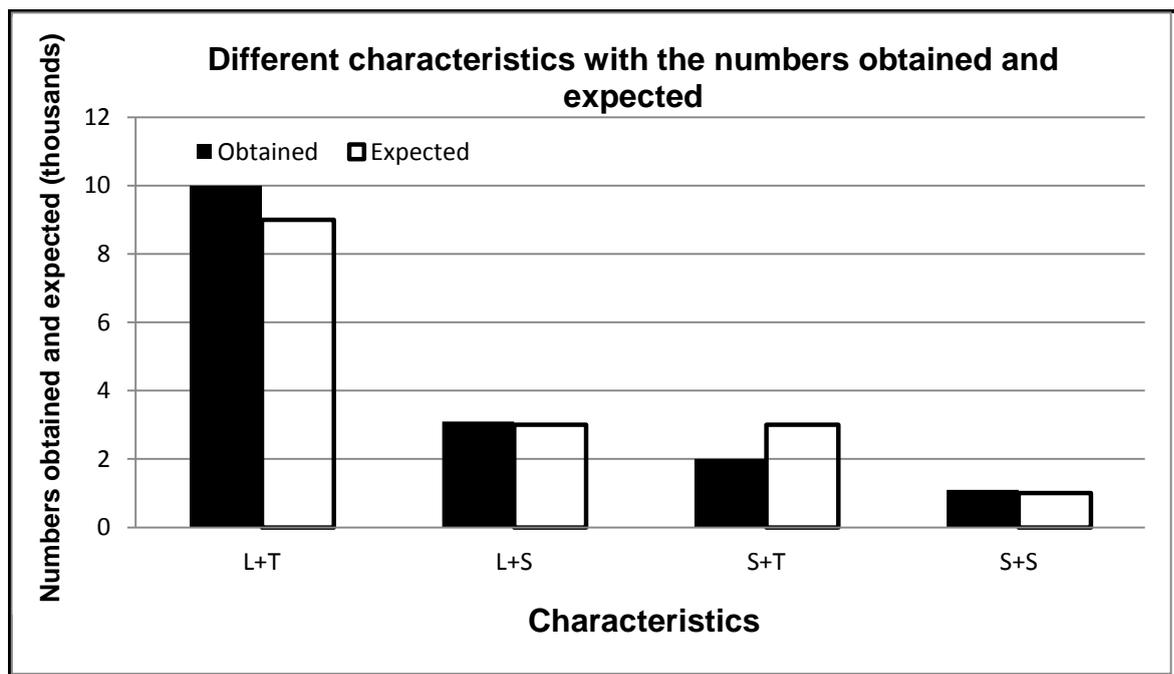
Best bulls for growth/health/fertility were shared ✓

(1)

(b) Environmental variation

Utilising the best available pastures/keeping them away from wet/muddy areas ✓

(1)

4.6 **Graph**4.6.1 **A combined bar graph of the different characteristics with the numbers obtained and numbers expected****CRITERIA/RUBRIC/MARKING GUIDELINES**

- Correct heading ✓
- X axis - correctly calibrated with label (Characteristics) ✓
- Y axis - correctly calibrated with label (Numbers obtained and expected) ✓
- Correct unit (Thousands) ✓
- Combined bar graph ✓
- Accuracy (80% + correctly plotted) ✓

(6)

4.6.2 **Deduction of the trend of the obtained numbers**
The obtained numbers are declining/decreasing ✓ (1)

4.7 **Genetic Modification**

4.7.1 **Identification of the technique**
Bacterial carriers/Agro-bacterium tumefaciens ✓ (1)

4.7.2 **TWO potential benefits of GM crops to the Environment**

- Less chemicals/pesticides/insecticides are used/less susceptible to diseases ✓
- It is target specific ✓ (2)

4.7.3 **TWO potential risks of genetic modified crops**

- Health ✓
- Environmental ✓
- Socio-economic ✓ (Any 2) (2)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150