



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2016

AGRICULTURAL SCIENCES: PAPER II

MARKING GUIDELINES

Time: 2½ hours

150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

SECTION A

QUESTION 1

1.1.1	A	B	C	D
1.1.2	A	B	C	D
1.1.3	A	B	C	D
1.1.4	A	B	C	D
1.1.5	A	B	C	D
1.1.6	A	B	C	D
1.1.7	A	B	C	D
1.1.8	A	B	C	D
1.1.9	A	B	C	D
1.1.10	A	B	C	D

(20)

1.2.1	E
1.2.2	C
1.2.3	G
1.2.4	D
1.2.5	F

(10)

1.3.1	Heterozygous
1.3.2	Supply
1.3.3	Casual
1.3.4	Collateral/fixed asset
1.3.5	Quantitative

(10)

1.4.1	Entrepreneur
1.4.2	Depreciation
1.4.3	Private
1.4.4	Prepotency
1.4.5	Standardisation

(5)

45 marks

SECTION B**QUESTION 2 AGRICULTURAL MANAGEMENT AND MARKETING****2.1 Marketing system for amadumbe****2.1.1 Three advantages of the free-market system**

- Producers sell where they please.
- Consumers buy where they please.
- Consumers buy when they please.
- Producers sell when they please.
- Producers can sell at their own price.
- Consumers can buy bargains.
- Sales are usually for immediate cash.
- There is usually very little delay in payment.
- Producers/entrepreneurs are stimulated to work hard.
- Production of quality products is encouraged.
- Entrepreneur shows initiative and drive.
- Go-between/intermediaries are eliminated.
- Products are usually fresh.

(Any 3) (3)

2.1.2 Three ways for solving the problem of oversupply

- Processing the produce that is in excess/value adding.
- Creation of storage facilities.
- Establishment of local, national and international markets/pool marketing system. (large brand names)
- Promotion and advertisement of the product.
- Diversification/utilising more or other production enterprises.
- Hedging.
- Dumping/reducing the price very drastically.
- Create more channels of distribution.
- Plan planting.
- Plant according to demand.

(Any 3) (3)

2.1.3 Four entrepreneurial skills that are required to commercialise the business

- Commitment
- Creativity
- Vision
- Financial skills
- Motivation
- Courage
- Risk management
- Innovation
- Hard-working
- Staying power
- People skills/human relations/cooperation with people
- Technical proficiency
- Decision-making
- Record-keeping skills
- Control skills

(Any other relevant management skills)

(Any 4) (4)

2.1.4 Disadvantages of marketing their own produce

- Marketing is time consuming/less time for production aspects.
- Marketing is costly/cost factor/promotion has a cost/not enough capital to pay for promotion material.
- Lack of experience.
- Competition between these small-scale farmers might arise. (Any 2) (2)

2.2 Financial record keeping**2.2.1 Importance of keeping financial records**

- To manage the capital of a farm/determine the profit or loss/idea of income and expenses.
- To analyse past and current performance/analyse success of business.
- Plan for the future of the farm/budgeting/replanning.
- Proof of payment/Tax purposes. (Any 2) (2)

2.2.2 Labourer incentive

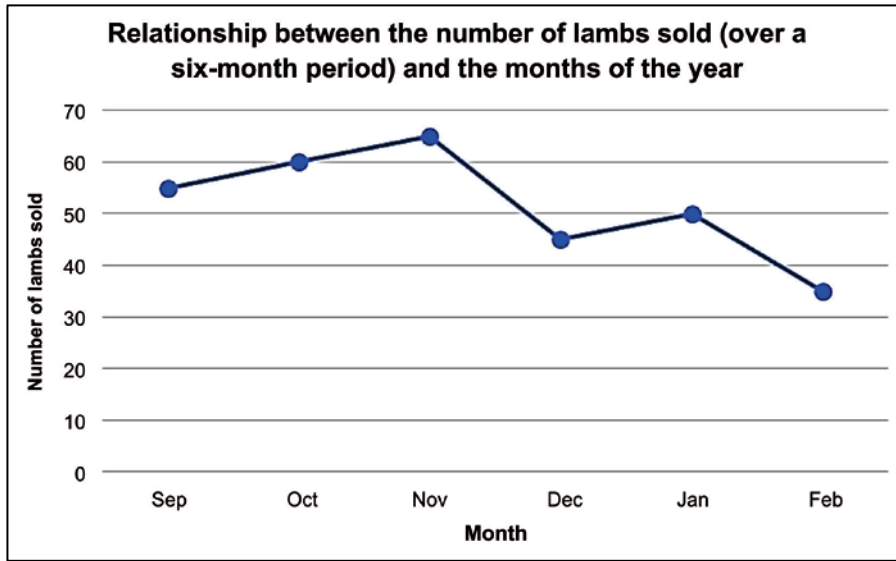
Farm workers receive eggs for free/Free 4 dozen eggs for workers. (2)

2.2.3 Creation of capital

- Production/layers – created when more capital by selling the eggs that are produced.
- Took a loan from Std Bank – loan repayment was made 06/08 and a loan is a method of increasing one's capital. (4)

2.3 The price and quantity of lamb sold over a six month period

2.3.1 Line graph



Line graph checklist

Evidence	Yes	No
Heading	1	0
x-axis labelled (Sep–Feb)	1	0
y-axis labelled (Number of lambs)	1	0
Correct values	1	0
Accuracy	1	0
Line graph	1	0

(6)

2.3.2 Month with highest income

November

(2)

2.3.3 Marketing strategy

- Use of breeding season/planning for marketing stage.
- Supply most of their animals during the festive season/December.
- Promotion/advertising/market research.
- Market animals when the price is highest.
- Sell heavier lambs.

(Any 2) (2)

2.3.4 Price calculation

(a) September:
 $22 \text{ kg} \times R79,00/\text{kg} = R1\ 738,00$

(2)

(b) December:
 $22 \text{ kg} \times R110/\text{kg} = R2\ 420,00$

(2)

2.3.5 Economic reason for decrease in supply

- Drop in price in January for lambs.
- Biggest demand is over/festive season is over/withholding stock/speculating for a higher price.
- Scarcity of money after the festive season.
- The farmer ran out of stock/no stock available.

(Any 1) (1)

[35]

QUESTION 3 PRODUCTION FACTORS**3.1 Record keeping****3.1.1 Financial statement**

Balance sheet/assets liability statement. (1)

3.1.2 Purpose of financial statement

It indicates the summary of financial status/liquidity of a farm at a specific point in time/particular date or time. (2)

3.1.3 Definition of net value

- The value that remains when all the debt is deducted from total assets in the farm at the time.

OR

- The difference between the value of your assets and the value of your liabilities. (2)

3.1.4 Net value calculation

$277\ 300 - 105\ 600 = 171\ 700$ (2)

3.1.5 Distinction between loan and grant

- Loan: money borrowed from a financial institution and repaid with interest.
- Grant: money given for free by funders and not to be paid back. (4)

3.2 Different farming enterprises**3.2.1 Risk management strategies and justification**

- **Diversification** – the farmer has a number of different enterprises (crop, livestock and fodder production) in order to spread the risk.
- **Hedging** – the farmer made future contracts/agreement with supermarket.
- **Insurance** – the farmer will insure the produce against unforeseen circumstances.
- **Flexibility/contingency planning** – the farmer will adapt to a crisis in an orderly way.
- **Effective control and safety measures** – the farmer will ensure that the product is appropriately prepared for the market place.
- **Value adding/Processing** – the farmer can process/value add for a more stable market price. (Any 2 × 2) (4)

3.2.2 THREE management principles

- Planning
- Organisation
- Co-ordination
- Motivation
- Decision-making
- Control
- Leadership
- Implementation (Any 3) (3)

3.3 Three functions of land as a production factor

- Provides space.
- Provides raw material.
- Provides food for humans and animals.
- It is a source of minerals used as fertilisers.
- Provided plants with water.

(Any 3) (3)

3.4 Case study**3.4.1 TWO examples of floating capital**

- Vegetable seeds
- Fertilisers
- Insecticides
- Tools

(Any 2) (2)

3.4.2 Labourer

Temporary or casual labourers – they were occasional labourers.

(2)

3.4.3 TWO ways to increase productivity

- Increase the size of the vegetable garden/combining land into a more economic unit.
- Bought seeds/Adopt scientific methods of farming.
- Effective use of capital/money.
- Water provision/irrigating the soil/supply irrigation system.

(Any 2) (2)

3.4.4 FOUR components of successful management

- Planning
- Control
- Decision-making
- Motivation
- Organisation and co-ordination
- Risk taker
- Accepts advice
- Makes corrections

(Any 4) (4)

3.4.5 Difference between medium- and short-term credits

Medium-term credit:

- The interest rate is relatively high.
- The loan can be paid back within 10 years.
- Used to purchase: machinery; greenhouse.

(Any 2) (4)

Short-term credit:

- The interest rate is very high.
- The loan can be paid back in less than 2 years.
- This finance is required to purchase: fuel; fertilisers and goods.

(Any 2) (4)

[35]

QUESTION 4 BASIC AGRICULTURAL GENETICS**4.1 Genotypes of horses****4.1.1 Type of dominance interaction**

Complete dominance

Black = B and White = b

(3)

4.1.2 Genotypes of individuals

(a) Bb

(1)

(b) Bb

(1)

4.1.3 Percentage of F1 generation that will be white

(a) BB × BB

(2)

(b) BB × Bb

(2)

(c) Bb × Bb

(2)

4.1.4 Producing white foals

- Breed all mares to a white stallion.
- All Bb mares have a 50% chance of producing a white foal.
- Repeat process with F2 generation to further select for Bb mares.

(5)

4.2 4.2.1 Replacement heifers

- The farmer would select heifers from the right of the graphs.
- Heifers weighing 240 or 250 kg at weaning.
- Selecting heifers that wean heavier should increase weaning weights.

(Any 2) (4)

4.2.2 Causes of weaning weight variations

- Length of breeding season.
- Condition of dam prior to calving.
- Amount of milk produced by the dam.
- Illness experienced by calf or cow pre-weaning.
- Size of the dam.
- Genetics.
- Climatic conditions (between 2 years).

(Any 3) (3)

4.3 Flower breeding illustration**4.3.1 Type of dominance interaction**

- Incomplete dominance.
- Heterozygote is midway between the two parents.

(3)

4.3.2 Identification of individual genotypes

A = WW/ww

B = RR/rr

C = RW/rw

(either both R & W caps or both lowercase not one of each)

(3)

4.3.3 **Punnett Square**

		Pink	
		R	W
Pink	R	RR	RW
	W	RW	WW

Genotypic ratio: 1 RR : 2 RW : 1 WW
 Phenotypic ratio: 1 Red : 2 Pink : 1 White

(6)
[35]

105 marks

Total: 150 marks