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**NATIONAL
SENIOR CERTIFICATE**

GRADE 10

NOVEMBER 2017

**AGRICULTURAL SCIENCES P1
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 10 pages.

SECTION A**QUESTION 1**

- | | | | | |
|-----|--------|----------------------|----------|------|
| 1.1 | 1.1.1 | B ✓✓ | | |
| | 1.1.2 | B ✓✓ | | |
| | 1.1.3 | D ✓✓ | | |
| | 1.1.4 | C ✓✓ | | |
| | 1.1.5 | D ✓✓ | | |
| | 1.1.6 | C ✓✓ | | |
| | 1.1.7 | D ✓✓ | | |
| | 1.1.8 | B ✓✓ | | |
| | 1.1.9 | C ✓✓ | | |
| | 1.1.10 | B ✓✓ | (10 x 2) | (20) |
| 1.2 | 1.2.1 | B only ✓✓ | | |
| | 1.2.2 | None ✓✓ | | |
| | 1.2.3 | Both A and B ✓✓ | | |
| | 1.2.4 | A only ✓✓ | | |
| | 1.2.5 | B only ✓✓ | (5 x 2) | (10) |
| 1.3 | 1.3.1 | Palatable ✓✓ | | |
| | 1.3.2 | Competition ✓✓ | | |
| | 1.3.3 | Industrialisation ✓✓ | | |
| | 1.3.4 | Layers ✓✓ | | |
| | 1.3.5 | Poaching ✓✓ | (5 x 2) | (10) |

| | | | | |
|-----|-------|-----------------------------------|---------|-----|
| 1.4 | 1.4.1 | Primary agriculture ✓ | | |
| | 1.4.2 | Arid/dry/unfavourable ✓ | | |
| | 1.4.3 | Capital ✓ | | |
| | 1.4.4 | Evaporation ✓ | | |
| | 1.4.5 | Foreign currency/foreign income ✓ | (5 x 1) | (5) |

TOTAL SECTION A: 45

SECTION B**QUESTION 2: AGRO-ECOLOGY****2.1 Identification of the bacteria:**

- 2.1.1 (a) Denitrifying bacteria ✓ (1)
 (b) Nitrifying bacteria ✓ (1)
 (c) Nitrogen-fixing bacteria ✓ (1)

2.1.2 Ways that a farmer can increase the nitrogen levels in the soil:

- Adding nitrogen fertilisers to the soil ✓
- Adding organic matter such as compost or manure to the soil ✓
- Planting legumes that have nitrogen-fixing bacteria in their roots ✓ (Any 2 x 1) (2)

2.1.3 Plants that have nodules in their roots:

- Legumes ✓✓ (2)

2.2 Organic farming**2.2.1 Crops produced by organic farmers from the scenario**

- Cereals ✓
- Vegetables ✓
- Roots and tubers ✓
- Herbs and spices ✓
- Fruits ✓
- Nuts ✓
- Rooibos tea ✓ (Any 2 x 1) (2)

2.2.2 Farming methods that organic farmers use

- Crop rotation ✓
- Green manure ✓
- Compost ✓
- Biological pest control ✓
- Mechanical weed control ✓ (Any 3 x 1) (3)

2.2.3 Reasons why organic farming has become so popular the past couple of decades

- Farming practices that do not disturb the environment ✓
- Less of a negative effect on biodiversity ✓
- Less pollution in soil and water ✓
- Reduce pesticides, growth hormones, antibiotics and preservatives ✓
- Healthier food produced that lessens risk of diseases ✓
- Fresh food with higher nutrient value and is tastier ✓ (Any 2 x 1) (2)

2.3 Symbiotic relationships found in ecosystems**2.3.1 Symbiotic relationships illustrated in diagrams A–C**

A – Competition ✓

B – Commensalism ✓

C – Mutualism ✓

(3)

2.3.2 Other symbiotic relationships that are not illustrated in the diagram in QUESTION 2.3

• Parasitism ✓

• Predator and prey ✓

(2)

2.4 Examples of edaphic factors

• Soil texture ✓

• Soil depth ✓

• Soil type ✓

• Soil water ✓

• Soil fertility ✓

(Any 3 x 1) (3)

2.5 Table showing biomes**2.5.1 Correct answers for letter (A–F)**

A – Forest ✓

B – Large trees ✓

C – Sheep, cattle, goats ✓

D – Central plateau of South Africa, KwaZulu-Natal, Eastern Cape ✓

E – Savanna ✓

F – Low trees and grass ✓

(6)

2.5.2 Fynbos ✓

(1)

2.6 Climate change**2.6.1 Four main greenhouse gases:**

• Water vapour ✓

• Carbon dioxide ✓

• Methane ✓

• Nitrous oxide ✓

(4)

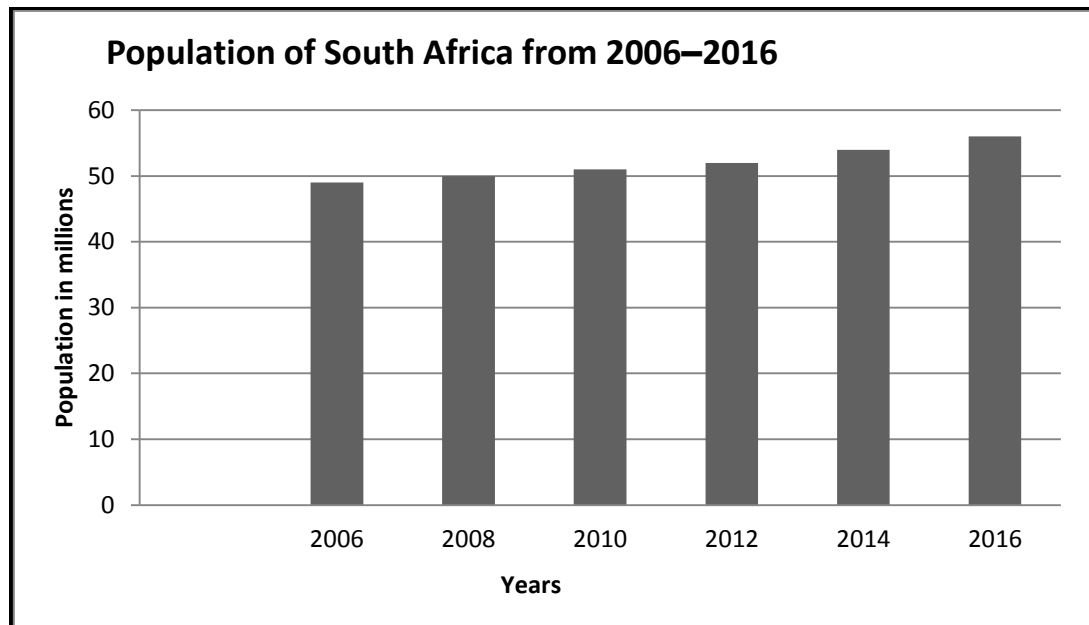
2.6.2 Human activities that cause an increase in greenhouse gases:

• Industrial revolution ✓

• Green revolution ✓

(2)

[35]

QUESTION 3: AGRI-INDUSTRY**3.1 Rounded-off figures of the population of South Africa from 2006–2016****3.1.1 Bar graph showing population of South Africa from 2006–2016****Criteria/rubric/marketing guidelines**

- Correct heading ✓
- Y-axis – correct label (Population in millions) ✓
- X-axis – correct label (Years) ✓
- Accuracy ✓
- Bar graph ✓
- Units (millions) ✓

(6)

3.1.2 Impacts of population growth on the agricultural sector

- Demand for food increases ✓
- Deforestation rates increase as more people need fuel wood ✓
- Farms become more mechanised ✓
- More people move to urban areas in search of employment opportunities ✓
- Use of agricultural land for housing ✓
- Agricultural land for food products decreases ✓
- Natural resources are degraded and depleted ✓
- Grazing land degenerates, which impacts negatively on livestock ✓

(Any 3 x 1)

(3)

3.2 Land reform**3.2.1 Differences between land redistribution and land restitution****Land redistribution**

- Giving previously disadvantaged ✓ people access to land ✓

Land restitution

- Returning land ✓ to people who were forcibly removed ✓ (4)

3.2.2 Function of land reform programmes

- To restore land rights ✓ (1)

3.2.3 Models of land ownership in South Africa

- State/government landownership ✓
- Communal landownership ✓
- Freehold land/private land ownership ✓ (3)

3.3 Agricultural organisations**3.3.1 Define the underlined concept**

- Agricultural organisation is an institution ✓ consisting of people who are involved in agriculture ✓ (2)

3.3.2 Functions of the Agricultural Research Council (ARC)

- Facilitates enhanced and ensures natural resource conservation ✓
- Sustaining a comparative agricultural economy ✓
- Provides new economic opportunities ✓
- Ensures high-quality and safe food ✓
- Contributes to better quality of life ✓
- Encourages national growth and development of South Africa ✓ (Any 3 x 1) (3)

3.4 Indigenous plants**3.4.1 Identification of the plants in DIAGRAM A and DIAGRAM B**

- DIAGRAM A – Aloe ✓
- DIAGRAM B – Hoodia gordonia ✓ (2)

3.4.2 Indication of the plants

- (a) Diagram A plant ✓ (1)
- (b) Diagram B plant ✓ (1)
- (c) Diagram A plant ✓ (1)

3.4.3 Advantages of indigenous farming practices

- Chemical free ✓
- Environmentally friendly ✓
- Low cost ✓
- Non-intensive ✓
- Adaptation to suit local environment ✓ (3)

3.5 Laws affecting agriculture

- | | | | |
|-------|-----|-----------------------------|-----|
| 3.5.1 | (a) | Resource protection laws ✓ | (1) |
| | (b) | Disease and chemical laws ✓ | (1) |
| | (c) | Labour laws ✓ | (1) |
| | (d) | Resource protection laws ✓ | (1) |
| | (e) | Land and land reform laws ✓ | (1) |

[35]

QUESTION 4: ANIMAL STUDIES**4.1 Nguni cattle breed****4.1.1 Advantages of the breed's thick pigmented hide**

- Ticks cannot attach to hide ✓
- Heat tolerant ✓

(2)

4.1.2 Explanation of the term *marbling*

- Meat is streaked with fat ✓ within the lean sections of the meat. ✓

(2)

4.1.3 Importance of the breed in the cultural lives of the African people

- Skins have cultural value ✓
- Lobola ✓

(2)

4.1.4 Identification of a characteristic that enables the Nguni to forage on steep slopes and in thick bushes

- Narrow hooves ✓

(1)

4.2 Intensive farming with broiler chickens**4.2.1 Breeds that would be ideal for intensive broiler production**

- Ross ✓
- Cobb ✓

(2)

4.2.2 Basic requirements for successful poultry production

- Housing ✓
- Management ✓
- Breeding ✓
- Nutrition ✓

(4)

4.3 Goat animals**4.3.1 Differences between grazers and browsers**

- Grazers:** Animals that only graze on grass ✓ and other plants close to the ground. ✓
- Browsers:** Animals that eat plants and shrubs ✓ above ground level ✓

(4)

4.3.2 Goats by-products and their uses

- Hides ✓ – used for manufacture of leather goods ✓
- Hair ✓ – used in the textile industry to make cashmere ✓
- Horns ✓ – used to make spoons ✓
- Intestines ✓ – used to make 'catgut' which is used as material for internal human surgical sutures and strings for musical instruments ✓
- Faeces ✓ – collected for use as an organic fertiliser. ✓

(Any 2 x 2) (4)

4.3.3 **Define the underlined term**

- Ruminants – animals that have four-part stomach (complex stomach) ✓ that later regurgitate previously swallowed food to chew and swallow again. ✓ (2)

4.4 **Game farming**4.4.1 **Examples of the big five game animals**

- Rhino ✓
- Lion ✓
- Buffalo ✓
- Leopard ✓
- Elephant ✓ (Any 2 x 1) (2)

4.4.2 **Importance of game farming**

- Contributes to the conservation of biodiversity and wildlife ✓
- Creates job opportunities ✓
- Helps economic growth ✓
- Tourist attraction ✓ (Any 3 x 1) (3)

4.4.3 **Uses of game animals**

- Tourism ✓
- Meat ✓
- Hides ✓
- Trophy hunting ✓ (Any 1 x 1) (1)

4.5 **Illustration of THREE animals**4.5.1 **Indicate with a suitable reason which of the above animals you would recommend for each of the young farmers mentioned below.**

- (a) Animal A ✓ – Produces large volumes of milk ✓ with low butterfat content ✓ (3)
- (b) Animal B ✓ – Supplies lactose-free milk ✓ that is ideal for lactose-intolerant people ✓ (3)
- [35]**

TOTAL SECTION B: 105
GRAND TOTAL: 150