



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2011

AGRICULTURAL SCIENCES P2

MARKS: 150

TIME: 2½ hours



This question paper consists of 14 pages.

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions from BOTH SECTIONS A and B.
2. SECTION A (QUESTION 1) must be answered on the attached ANSWER SHEET.
3. Place your ANSWER SHEET for SECTION A (QUESTION 1) within your ANSWER BOOK.
4. SECTION B (QUESTIONS 2 to 4) must be answered in the ANSWER BOOK.
5. Start each question from SECTION B on a NEW page.
6. Read the questions carefully and make sure you answer what is asked.
7. Number the answers correctly according to the numbering system used in this question paper.
8. DO NOT SPLIT the answers to the questions.
9. Write neatly and legibly.

SECTION A**QUESTION 1**

- 1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and make a cross (X) over the appropriate letter in the block (A – D) next to the question number (1.1.1 – 1.1.10) on the attached ANSWER SHEET.
NO MARKS WILL BE ALLOCATED IF MORE THAN ONE CROSS (X) APPEARS FOR AN ANSWER.

1.1.1 Traditional medicinal plants can be grown just like other crops to reduce extinction. However, they have to be grown organically because ...

- A inorganic fertilisers are too expensive.
- B chemicals can affect their medicinal properties.
- C farmers do not know of straight fertilisers.
- D traditional plants do not like inorganic fertilisers.

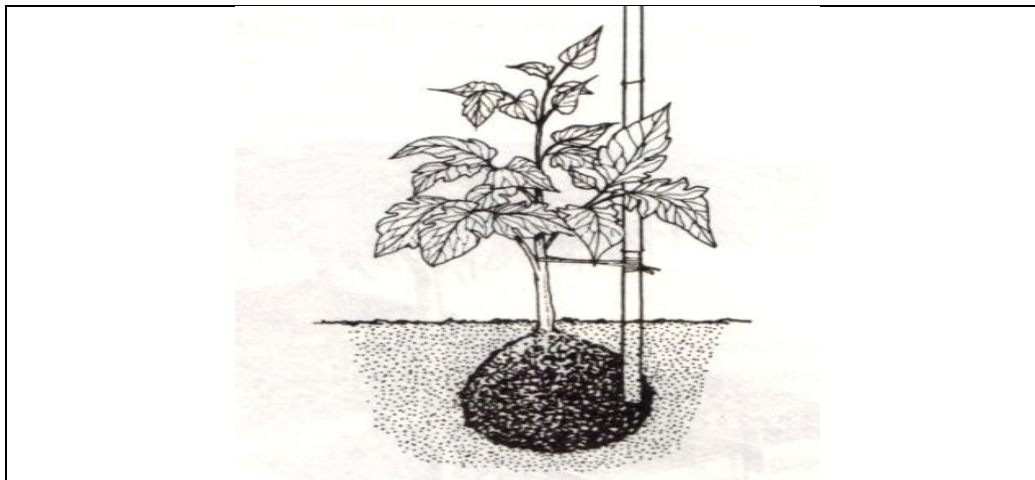
1.1.2 Plants that have the male and female flowers on separate plants are...

- A dioecious plants.
- B monoecious plants.
- C non-productive plants.
- D artificial plants.

1.1.3 A macro nutrient and a micro nutrient are both responsible for the formation of chlorophyll in plants. A common deficiency results in yellow leaves. These are ...

- A copper and phosphorus.
- B boron and sulphur.
- C magnesium and iron.
- D calcium and zinc.

- 1.1.4 A learner fixed a stick and tied it up with a transplanted tomato seedling as shown in the picture below. Which of the following could be the reason?


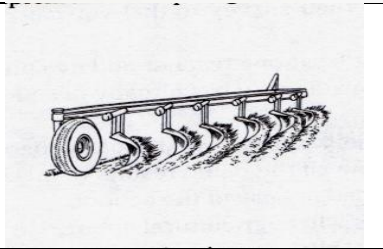

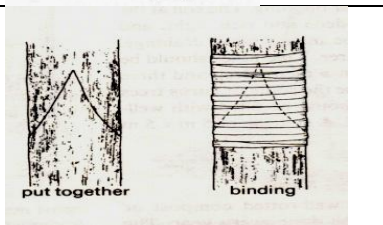
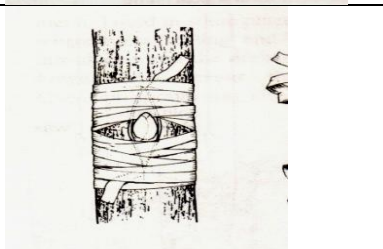


- A To help the plant to get more air and rainfall.
B So that herbivores cannot eat the leaves.
C So that the plant develops more roots.
D To support the plant to stand firm against wind action.
- 1.1.5 One of the following is organic manure which was often used by our ancestors for crop production.
- A Guano
B LAN (48)
C LAN (46)
D Compound fertilisers
- 1.1.6 Some farmers produce crops to meet their household needs. This is called ...
- A commercial agriculture
B subsistence agriculture
C extensive agriculture
D viticulture
- 1.1.7 Some learners cultivated one crop on a single piece of land. Which of the following best describes the cropping practice the learners used?
- A Monocropping
B Crop rotation
C Mixed farming
D Intercropping

- 1.1.8 ... consists of small sprinklers close to the ground that sprays a fine mist of water onto the crop.
- A Micro-irrigation
 - B Flood irrigation
 - C Drip irrigation
 - D Sprinkler irrigation
- 1.1.9 Only ONE of the following is a good way of using resources wisely when a farmer is stocking livestock on a field.
- A Overgrazing
 - B Selective grazing
 - C Stocking rate
 - D Trampling
- 1.1.10 A farmer uses very advanced technology including computers and satellite images to optimise production on the farm. This farmer is doing ...
- A subsistence farming.
 - B precision farming.
 - C ancestral farming.
 - D extensive farming.

(10 x 2) (20)

- 1.2 Choose a word/term from COLUMN B that matches the diagram in COLUMN A. Write only the letter (A – G) next to the question number (1.2.1 – 1.2.5) on the attached ANSWER SHEET.

COLUMN A		COLUMN B	
	1.2.1	A	Budding
	1.2.2	B	Monocotyledonous leaf
	1.2.3	C	Nitrogen fixation
	1.2.4	D	Disc plough
	1.2.5	E	Dicotyledonous plant
		F	Ripper
		G	Grafting

(5 x 2) (10)

1.3 Give ONE TERM/DESCRIPTION for each of the following descriptions. Write only the term next to the question number (1.3.1 – 1.3.5) on the attached ANSWER SHEET.

- 1.3.1 The female reproductive organ of a flower that consists of a stigma, style and ovary.
- 1.3.2 The loss of water vapour by plants mainly through small openings in the leaves or the stomata.
- 1.3.3 The knowledge whereby farmers in the rural areas collect herbs to treat diseases of animals like sheep and goats.
- 1.3.4 The scientific process that allows scientists to move genetic material between plants with the aim of changing their characteristics.
- 1.3.5 The instrument that measures the force with which water is held in the soil by the soil particles.

(5 x 2) (10)

1.4 Change the UNDERLINED WORDS in the following statements to make them TRUE. Write only the appropriate word(s) next to the question number (1.4.1 – 1.4.5) on the attached ANSWER SHEET.

- 1.4.1 A period of resting when the seed will not germinate even if the environmental conditions are good is known as hydroponics.
- 1.4.2 Prevention is a natural way of controlling pests by introducing predators that are the natural enemies of the pest to control them.
- 1.4.3 The method of protecting the soil surface by covering the soil surface with dead plant material to conserve soil moisture is crop rotation.
- 1.4.4 Phloem is special cells in the roots of plants that are adapted for absorbing water from the soil.
- 1.4.5 Precision farming is a form of agriculture that relies on organic sources of inputs amongst other practices to create a naturally balanced ecosystem.

(5 x 1) (5)

TOTAL SECTION A: 45

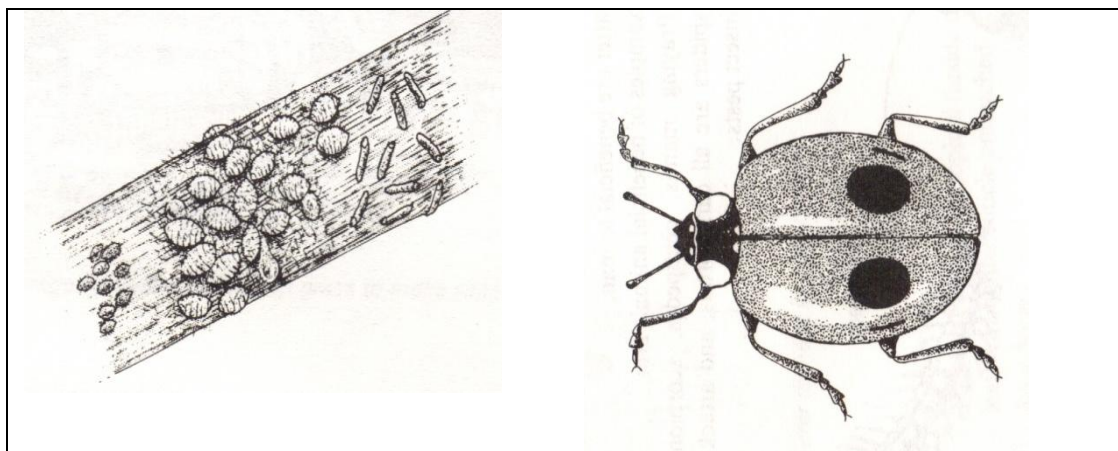
SECTION B

Start this question on a new page.

QUESTION 2: PLANT STUDIES

- 2.1 Photosynthesis is a complex chemical process consisting of a series of reactions that occur mostly in green plants. Structures such as root hairs, stomata and chlorophyll pigments play a significant role in photosynthesis.
- 2.1.1 Briefly explain the significance of the underlined structures in the process of photosynthesis in QUESTION 2.1. (4)
- 2.1.2 Name TWO mechanisms involved in the flow of water through the stem of a growing plant. (2)
- 2.1.3 Draw a flow diagram to demonstrate the movement of water from the soil through a plant and out into the atmosphere. (3)
- 2.1.4 "Leaf sample analysis must be encouraged in South Africa." Validate this statement with TWO reasons. (2)
- 2.2 Cross-pollination can sometimes take place between species in the same genus. For example oranges and lemons which are both in the *Citrus* genus can cross pollinate. Cross-pollination can also take place between protandrous and protogynous varieties.
- 2.2.1 Define cross-pollination. (3)
- 2.2.2 Cross-pollinated plants have special adaptations to pollinating agents. Justify this statement by explaining FOUR ways in which plants can adapt to wind pollination. (4)
- 2.2.3 List TWO agents of pollination in nature. (2)
- 2.3 Nitrogen from organic matter occurs in large amounts in the soil. However, about 98 per cent of the nitrogen in the soil is unavailable to plants.
- 2.3.1 Compose a reason for the statement in QUESTION 2.3 above. (3)
- 2.3.2 A local farmer threw blood meal and bones onto his land. Indicate the TWO basic nutrients that could be released from the decomposition of the blood and the bones. (2)
- 2.3.3 Besides the use of herbicides, give THREE ways to control weeds in a vegetable garden. (3)

- 2.4 Aphids and scale insects attacked crops on a farm, sucking the sap from the young plants. A traditional farmer introduced lady bird beetles on the farm as the only available alternative to control the pests. The farmer was afraid of the serious damages pesticides could cause on the farm.



Aphids and scale insects 1

lady bird

- 2.4.1 Identify the method the farmer used to control the aphids. (1)
- 2.4.2 Formulate ONE reason why the farmer introduced lady birds on the farm. (2)
- 2.4.3 “The use of pesticides could cause serious damages on the farm.”
Justify the statement with FOUR reasons. (4)

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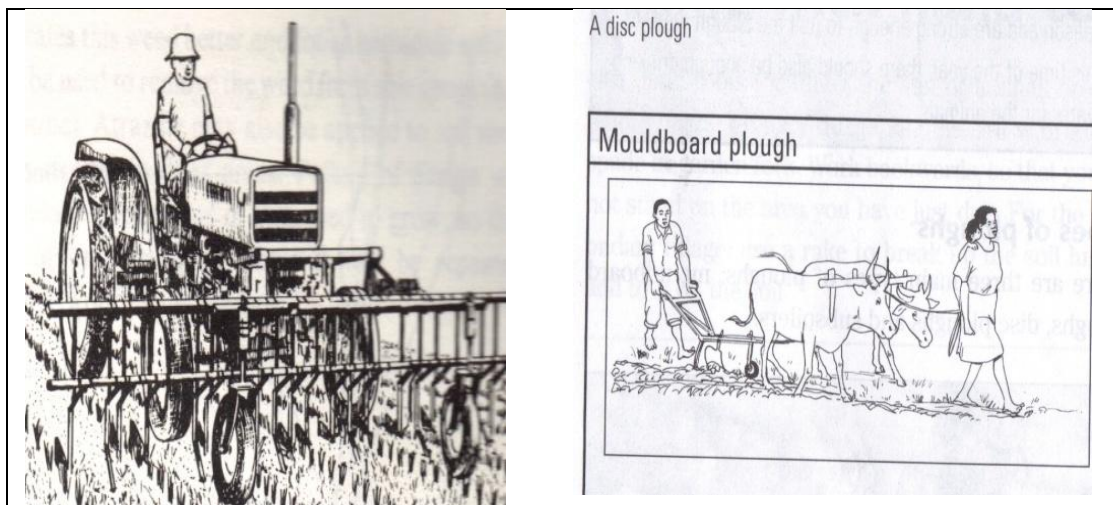
QUESTION 3

Start this question on a new page.

OPTIMAL RESOURCE UTILISATION

- 3.1 One technique used to gather information about soil is the use of aerial photographs and orthophoto.
- 3.1.1 Give THREE examples of types of information that you can gather by viewing the aerial photograph of a place. (3)
- 3.1.2 Name TWO reasons for doing soil surveys. (2)
- 3.1.3 Outline THREE traditional methods to control soil erosion. (3)
- 3.1.4 (a) Would you encourage the use of green houses for vegetable cultivation? (1)
- (b) Give THREE reasons to support your answer to QUESTION (a) above. (3)
- 3.2 A rural farmer lives close to the beach. The two main sources of water for irrigation are the use of rainwater and seawater.
- 3.2.1 Recommend ONE of the underlined water sources to the farmer for irrigation purposes. (1)
- 3.2.2 Give ONE reason for your answer to QUESTION 3.2.1 (1)
- 3.2.3 Determine TWO measures the farmer can take to keep rainwater in tanks clean. (2)
- 3.2.4 Give THREE guidelines you will recommend to the farmer for irrigating fruit trees. (3)
- 3.2.5 State TWO factors to be considered when installing a pipe drainage system. (2)

- 3.3 A commercial farmer and an indigenous farmer are both using different approaches to till the land. They both anticipate achieving the same benefits that go with turning the soil before planting.



- 3.3.1 Determine THREE reasons why farmers plough before planting. (3)
- 3.3.2 Infer THREE benefits of the indigenous farmers approach to ploughing using animals. (3)
- 3.3.3 State THREE most important natural resources required for agricultural activities. (3)
- 3.3.4 Assign THREE potential impacts of pastures on natural resources. (3)
- 3.3.5 Propose TWO measures to rehabilitate dongas in rural areas. (4)

[35]

QUESTION 4

Start this question on a new page.

- 4.1 The table below shows the frequency of visits of pollinating insects onto a flowering cocoa tree per day.

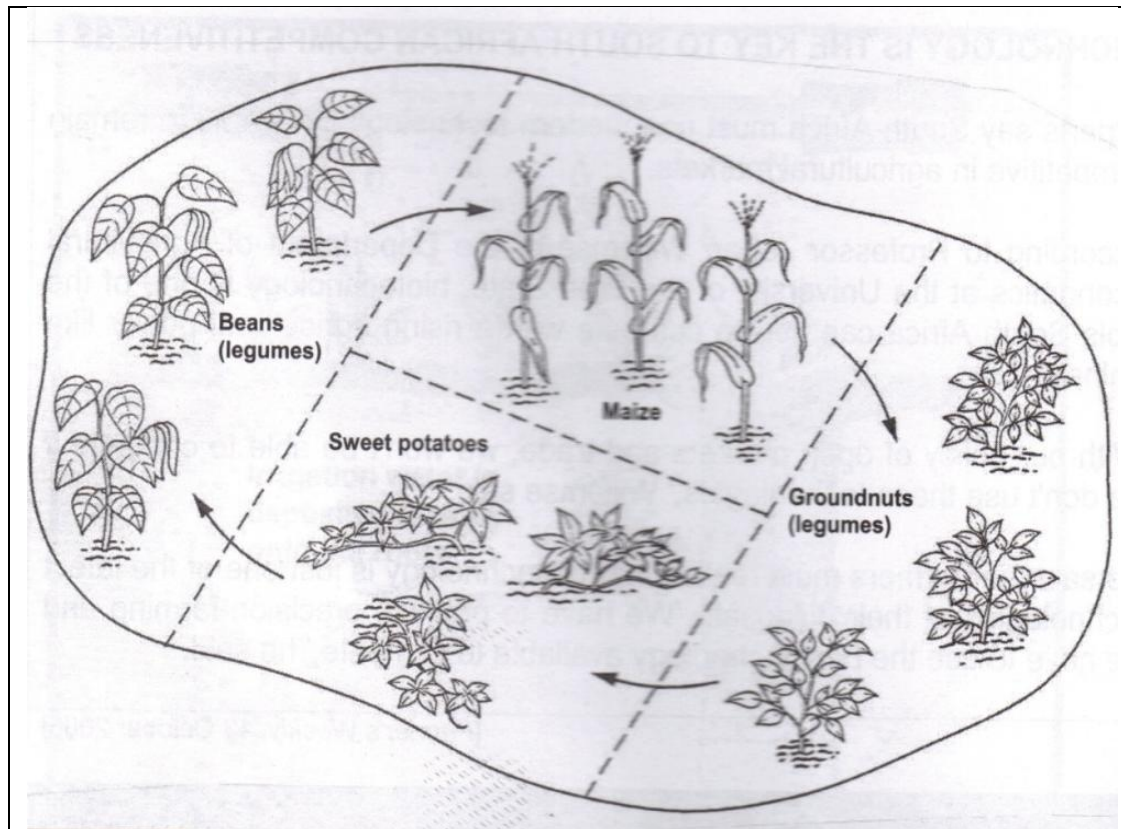
Insect	Frequency of visit
Mosquito	8 times
Butterfly	12 times
Bee	16 times
Blue fly	4 times

- 4.1.1 Translate the information in the table into a bar graph and clearly show ALL necessary attributes of the bar graph. (4)
- 4.1.2 How many times did all the insects visit the cocoa tree? Show all calculations. (2)
- 4.2 Hydroponics is the science of growing plants in a medium other than soil, by supplying the roots with a complete nutrient solution.
- 4.2.1 Predict THREE disadvantages of hydroponics. (3)
- 4.2.2 Give FOUR production aspects that should be in place for seeds to germinate. (4)
- 4.3 Study the information and then answer the questions.
- 4.3.1 Tabulate the information in the box into renewable and non-renewable resources.

Air
Gold
Plants
Animals
Sandy Soil
Fossil fuels

- 4.3.2 Mention THREE reasons why people harvest natural resources. (3)
- 4.3.3 Assign FOUR activities that can conserve the natural vegetation of South Africa. (4)
- 4.3.4 Define the terminology, "wetlands". (2)
- 4.3.5 State THREE advantages of wetlands in an ecosystem. (3)

- 4.4 The illustration below indicates a plot where crop rotation has been practiced.



- 4.4.1 Analyse the principle or laws the farmer used to select the crops for the rotation.

(4)
[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150

ANSWER SHEET**AGRICULTURAL SCIENCES P2**

**EXAMINATION NUMBER/
NAME AND SURNAME** _____

SECTION A**QUESTION 1.1**

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

(10 x 2) (20)

QUESTION 1.2

1.2.1 _____

1.2.2 _____

1.2.3 _____

1.2.4 _____

1.2.5 _____

(5 x 2) (10)

QUESTION 1.3

1.3.1 _____

1.3.2 _____

1.3.3 _____

1.3.4 _____

1.3.5 _____

(5 x 2) (10)

QUESTION 1.4

1.4.1 _____

1.4.2 _____

1.4.3 _____

1.4.4 _____

1.4.5 _____

(5 x 1) (5)

