Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2012

AGRICULTURAL SCIENCES P2
MEMORANDUM

MARKS: 150

This memorandum consists of 8 pages.

ANSWER SHEET

SECTION A

QUESTION 1.1

QUESTION 1.2

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)

1.2.1   B √√

1.2.2   C √√

1.2.3   D √√

1.2.4   C √√

1.2.5   A √√

(5 x 2)   (10)

QUESTION 1.3

QUESTION 1.4

1.3.1   Deficiency symptom √√

1.3.2   Dongas √√

1.3.3   Heterotrophic organisms √√

1.3.4   Selection √√

1.3.5   Vectors √√

(5 x 2) (10)

1.4.1   chlorosis √

1.4.2   schedule irrigation √

1.4.3   drainage √

1.4.4   mould board plough √

1.4.5   style √

(5 x 1)   (5)

TOTAL SECTION A: **45**

SECTION B

QUESTION 2

2.1 2.1.1 Photosynthesis √√ (2)

  2.1.2
  - Provision of oxygen √
  - Provision of food (sugars/carbohydrates) √
  - Reduction of carbon dioxide √ (Any 2 x 1) (2)

  2.1.3 Roots √   – e.g. carrots, turnips, beetroot √
    Stems √   – e.g. potatoes, asparagus, sugarcane √
    Leaves/flowers √ – e.g. cauliflowers, cabbage. √
    Seeds/nuts √   – e.g. beans, maize, peanuts √
    Fruits √   – e.g. grapes, bananas, peaches √
                        (Any 2 and example) (4)

  2.1.4
  - Root pressure √
  - Capillarity √
  - Adhesion/cohesion √
  - Transpiration pull √ (4)

2.2 2.2.1

MICRO NUTRIENTS	MACRO NUTRIENTS	
Copper √	Nitrogen √	
Zinc √	Phosphorus √	(4)

  2.2.2 **Cross pollination**;
    It is the transfer of ripe pollen grains √ from the anthers of one
    flower √ to the ripe, receptive stigma of another flower √ on a
    different plant of the same species. √ (4)

  2.2.3 The sun √ (1)

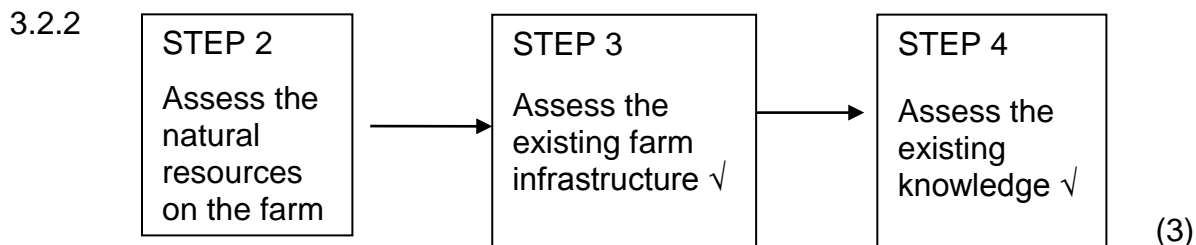2.3 2.3.1 Potash/potassium √√ (2)

  2.3.2 Phosphorus √√ (2)

2.4
  - Bio-control through the introduction of predators that are the natural
    enemies of pests. √
  - Parasites of pests such as tiny worms known as nematodes and fungi
    can be sprayed on fields. √
  - Genetic engineering of crops that produce their own pesticides such as
    Bt Maize. √
  - Genetic engineering of man-made viruses to target only certain larvae or
    insects pests when sprayed on crops. √
  - Synthesis of the natural chemicals produced by insects to warn their
    fellow insects of danger and frighten them away from crops. √ (Any 3 x 1) (3)

2.5   2.5.1   Grafting √   (1)

        2.5.2   A – scion √

                  B – stock √   (2)

        2.5.3   • It keeps the two parts together in a fixed position until they
                    have grown together/it holds slip and root stock together. √
                  • It restricts evaporation from the cut/stops the joint from drying
                    out. √
                  • It excludes water and air, and entry of fungi at the joint. √
                  • It seals the grafting cut. √   (Any 2 x 1)   (2)

        2.5.3   Prevention √
                  Monitoring √
                  Selection of the most appropriate controls √   (Any 2 x 1)   (2)
                                                                                              [35]

QUESTION 3

3.1   3.1.1   • To prepare soil for planting. √
                  • To loosen the soil. √
                  • To control weeds. √
                  • To mix fertiliser in the soil. √
                  • To bury or mix remains of previous crops into soil. √ (Any 3 x 1)   (3)

        3.1.2   • It is cheaper because no fuel is bought. √
                  • No special skills needed to operate. √
                  • The manure of the animals fertilise the soil. √
                  • No damage to soil that can be caused by a tractor. √ (Any 3 x 1)   (3)

        3.1.3   • Gulley erosion √
                  • Sheet erosion √
                  • Rill erosion √
                  • Rain splash erosion √   (Any 3 x 1)   (3)

        3.1.4   **Primary tillage:**
                  It is the practice where the farmer plants the seed directly into the
                  residue from the previous crop √ without ploughing the soil √   (2)

        3.1.5   • The use of running water to generate electricity. √
                  • The use of the sun in a solar cooker. √   (2)

3.2   3.2.1
- The presence of water in the soils for long periods of time. √
- Mottling of the soils from water logging/soils have a mixture of grey, brown, red and black colours. √
- The presence of plants that is adapted to wetland conditions. √
- Wetlands are normally found at the bottom of valleys and in flat areas where water tends to collect. √   (Any 3 x 1)   (3)
-

3.2.2

STEP 2	STEP 3	STEP 4
Assess the natural resources on the farm	Assess the existing farm infrastructure √	Assess the existing knowledge √

(3)

3.2.3   A windmill √   (1)

3.2.4   The wind √   (1)

3.2.5   To pump water from the well √√   (2)

3.3   3.3.1   FIGURE A = Intensive system/commercial farming. √

FIGURE B = Extensive/traditional/subsistence farming. √   (2)

3.3.2
- Temperature can be controlled to suit crops requirements/crops can be cultivated out of season. √
- Farmers can grow crops that would otherwise not be possible in their natural climate. √
- Crops are protected against UV radiation/strong winds/ thunderstorms.
- Diseases and pest/rodent attack is effectively controlled. √
- Hydroponics can effectively be practiced in greenhouses. √
- Crops can be produced for specific market dates. √
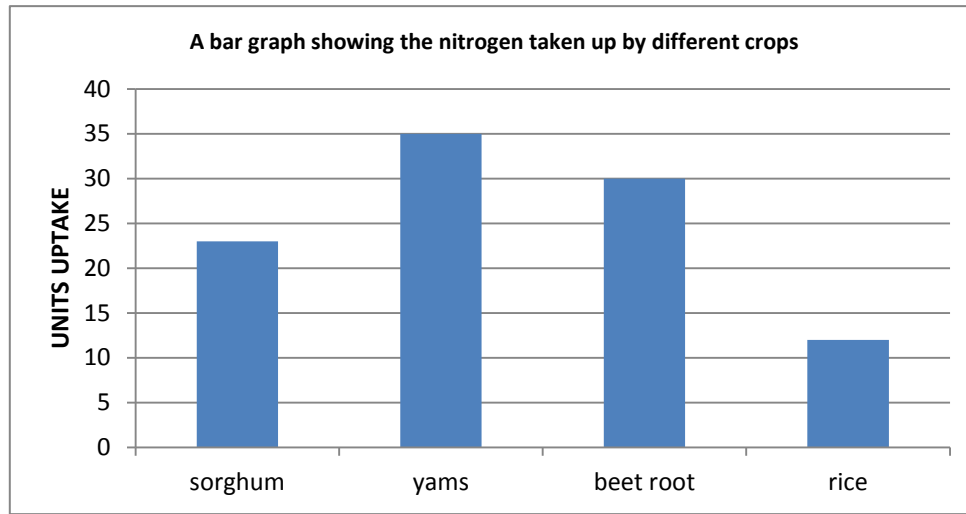- High quality products can be produced. √   (Any 3 x 1)   (3)

3.3.3   **Drainage:**
It is the removal of surface/subsurface/excess water from an area √ by natural or artificial means. √   (2)

3.3.4
- They become chocked with rubbish. √
- Plants grow in drains to impede water movement. √
- Open drains restrict movements of vehicles. √
- Open drains become habitats for rodents/pests. √
- Valuable soil surface is lost. √   (Any 2 x 1)   (2)

3.3.5
- Flood irrigation/furrow/bed √
- Drip/micro irrigation/micro spray irrigation √
- Sprinkler irrigation/spray irrigation √   (3)

[35]

QUESTION 4

4.1   4.1.1

A bar graph showing the nitrogen taken up by different crops

(Graph: UNITS UPTAKE on Y-axis, 0 to 40; crops on X-axis)
- sorghum ≈ 23
- yams ≈ 35
- beet root ≈ 30
- rice ≈ 12

Crops

Correct heading/title √
Correct labelling of the Y-axis and X-axis √
Correct scaling, using ruler √
Bar graph √   (4)

4.1.2   Intake by yam = 35
Intake by rice = 12
Difference = 35 – 12 √ = 23 √   (2)

4.1.3   Rice √   (1)

4.2   4.2.1   • Alien plants lack the natural enemies like pest and diseases to
control them. √
• Some alien plants spread rapidly to invade and displace local
vegetation. √
• They invade agricultural land. √
• They invade water courses and use valuable water. √ (Any 3 x 1)   (3)

4.2.2   The Conservation of Agricultural Resources Act √√/ (CARA Act) √√/
(Act 43 of 1983). √√   (2)

4.3   4.3.1   • Plants grown vegetatively usually grow faster than if they are
grown from seeds. √
• Plants grown vegetatively will be exactly the same as the parent
plant. √
• Fruit trees that are grown vegetatively bear fruits in the first year
that they are propagated. √
• Some plants such as bananas and pineapples do not produce
seeds and can only be propagated vegetatively √   (Any 3 x 1)   (3)

4.3.2
- Onion √
- Garlic √
- Chives √
- Shallots √
- Lily √
- Iris √
- Daffodil √
- Tulips √
- Hyacinth √ (Any 2 x 1) (2)

4.4
- There is high capital outlay as specialised equipment is needed. √
- It needs an expert to practice it successfully. √
- The grower must have access to information about the nutrient requirement of the particular crops to be grown. √
- Diseases can be spread easily through the water system. √ (Any 3 x 1) (3)

4.5 4.5.1

Pest	Viral disease	Fugal disease
Mites √	Ring spot √	Damping off √
Nematodes √	Mosaic √	Rust √

(6)

4.5.2
- Used for fuel/firewood
- Used in building/roofing
- Fences (Any 2 x 1) (2)

4.5.3
- Selecting a crop cultivar that is suited to the local conditions and is resistant or tolerant to local pests. √
- Selecting the most suitable field for the crop. √
- Preparing the land properly to encourage healthy plant growth. √
- Selecting planting time to avoid times of the year when pests are common. √
- Implementing a good fertilisation programme. √
- Planning a careful irrigation programme. √
- Sanitising the field by disposing of crop residues as soon as possible. √ (Any 2 x 1) (2)

4.5.4
- The person that applies the pesticides must wear safety gear such as gloves, safety glasses and breathing masks.√
- The farmer must honour the withdrawal period of the pesticide. √
- The user must only apply pesticides under suitable weather conditions. √ (3)

4.5.5   • It needs a sterile/disease free environment. √
        • It needs a special growth media made up of chemicals and nutrients. √
        • It needs a micro climate/controlled water and temperature for growth. √   (Any 2 x 1)   (2)

[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150