



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 11**

**NOVEMBER 2012**

**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.

Example: 

A	<input checked="" type="checkbox"/>	C	D
---	-------------------------------------	---	---

1.1.1 The carrying capacity of a veld refers to ...

- A the amount of trees and shrubs on the field.
- B the area of land needed to support an animal for a year.
- C the number of farmers that can live on a farm for a year.
- D the rivers and valleys on a stretch of land.

1.1.2 Learners put a plastic bag to cover a branch of a tree in an experiment as shown below.



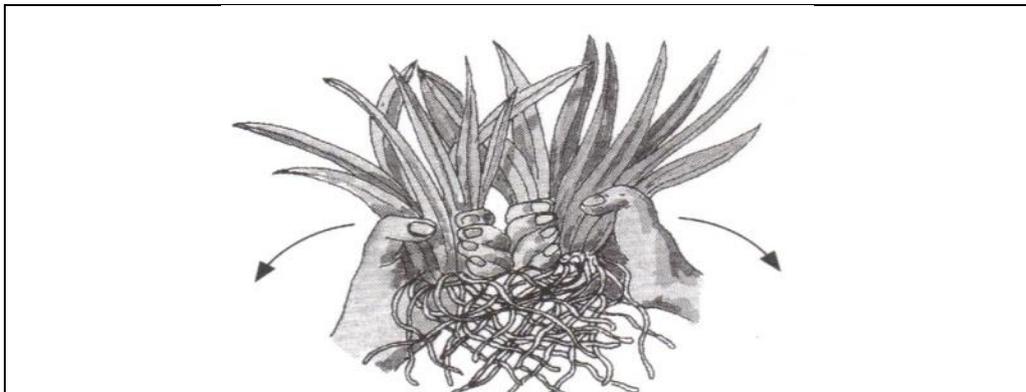
What could be the objective of their experiment?

- A To determine the rate of oxidation in plants.
- B To determine the rate of transpiration in leaves.
- C To determine the types of hormones in leaves.
- D To determine carbon reduction in plastics.

1.1.3 One of the cropping practices used by our ancestors to maintain the organic source of nitrogen in soil was to ...

- A monocrop mealies on highlands.
- B intercrop sorghum and rye.
- C intercrop cereals and legumes.
- D burn the grass before planting.

- 1.1.4 ... is a useful tool for finding out both the type of a soil and the depth of the soil.
- A A soil auger
  - B An orthophoto
  - C A monometer
  - D A photometer
- 1.1.5 The benefits of biotechnology does not include ONE of the following:
- A Development of inferior animals.
  - B Enhancing food security.
  - C Environmental sustainability.
  - D Improved industrial development processes.
- 1.1.6 A passive process which involves the movement of ions from an area of high concentration to an area of low concentration is ...
- A mineralisation.
  - B active transport.
  - C diffusion.
  - D oxidation reaction.
- 1.1.7 An under-graduate student visited your location to consult with farmers about soil management and crop production. Which of the following careers would you associate him/her with?
- A Entomologist
  - B Agronomist
  - C Horticulturist
  - D Viticulturist
- 1.1.8 The illustration in the diagram represents plant propagation by one of the following methods:



- A Layering
- B Tissue culture
- C Budding
- D Division

1.1.9 Poultry manure was buried by a farmer in the soil. The aim of the farmer was to process the organic manure into inorganic nitrogen. This could be achieved through ...

- A immobilisation.
- B mineralisation.
- C oxidation.
- D carbonation.

1.1.10 Learners observed that the colour of their cabbage in the school garden was changing from green to purple. This could be a deficiency of ...

- A nitrogen.
- B zinc.
- C potash.
- D phosphorus.

(10 x 2) (20)

1.2 In the table below a statement with TWO possible answers are given. Decide whether the statement in COLUMN B relates to A only, B only, both A and B or NONE of the answers in COLUMN A and make a cross (X) in the block (A – D) next to the question number (1.2.1 – 1.2.5) on the attached ANSWER SHEET.

Example:

COLUMN A		COLUMN A
A:	filament	Stamen
B:	anther	

Answer:

The statement refers to:			
Only A	Only B	A and B	None
A	B	<del>C</del>	D

COLUMN A			COLUMN B
1.2.1	A:	Endosperm	A layer of cells that needs to make contact when grafting is done
	B:	Cambium	
1.2.2	A:	Petioles	Plant samples
	B:	Leaves	
1.2.3	A:	Kraal manure	Commercial fertilisers
	B:	Compost	
1.2.4	A:	Corn smut	Fungi
	B:	Microscopic spores	
1.2.5	A:	Tensiometer	Porous ceramic cup, vacuum gauge, plastic body tube
	B:	Evaporation pan	

(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 Signs showing that a plant has too little of one or more mineral salts.
- 1.3.2 Dry gullies or holes that have been created by water erosion.
- 1.3.3 Plants that cannot make their own food and feed on organic substances such as plant or animal tissues.
- 1.3.4 The process of improving cultivars by choosing the best plants from which to collect seed.
- 1.3.5 Insects that carry disease-causing organisms from diseased to healthy plants.
- (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 Parthenocarpy is a condition in green plants in which all or part of the leaves becomes yellow.
- 1.4.2 Micro irrigation involves planning when and how much to irrigate.
- 1.4.3 The removal of excess water from a waterlogged land is an example of irrigation.
- 1.4.4 Disc ploughs are drawn or pulled by animals like cattle and donkeys to plough lands in some locations.
- 1.4.5 The slender stalk that supports the stigma of a flower is the filament.
- (5 x 1) (5)

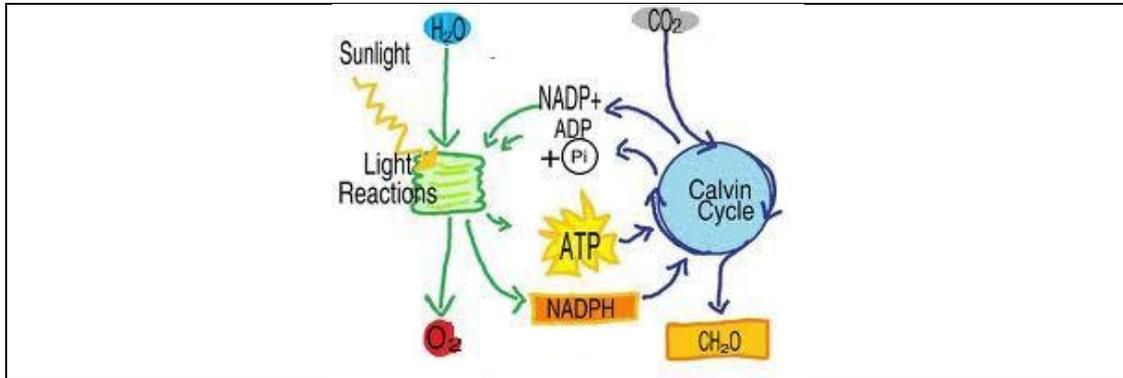
**TOTAL SECTION A: 45**

**SECTION B**

Start this question on a new page.

**QUESTION 2: PLANT STUDIES**

2.1 The illustration below indicates a very important process in plant studies.



- 2.1.1 Critically examine the process and assign a suitable description for it. (2)
- 2.1.2 Identify TWO benefits of the process to man. (2)
- 2.1.3 Plants have organs used for storage of excess carbohydrates. Mention any TWO storage organs and give ONE example of each. (4)
- 2.1.4 Suggest FOUR factors that influence the upward movement of water in plants. (4)

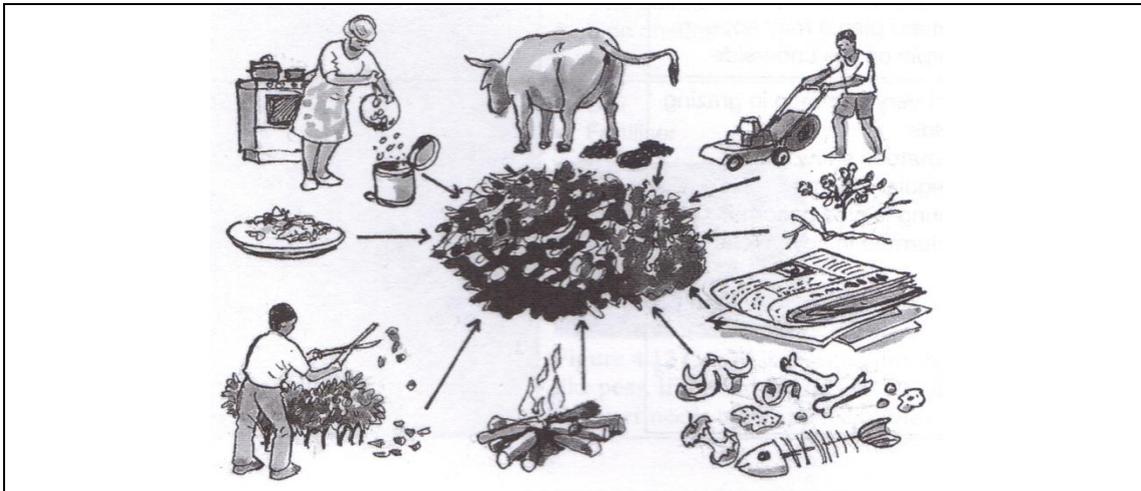
2.2 Mineral nutrients are classified into macro and micro nutrients.

2.2.1 Tabulate the following mineral nutrients in the box into macro and micro nutrients:

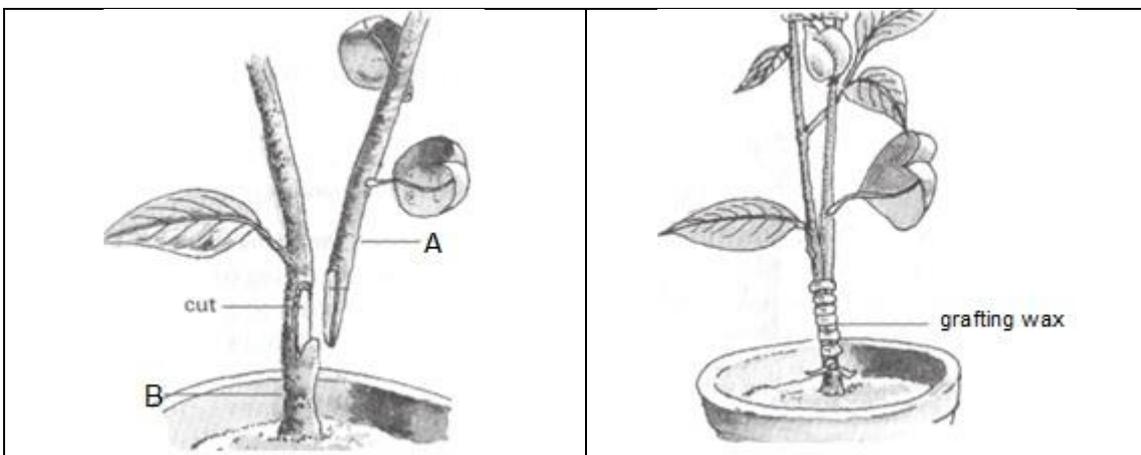
Copper
Zinc
Nitrogen
Phosphorus

- (4)
- 2.2.2 Define the concept *cross pollination*. (4)
- 2.2.3 Which of the following is NOT an agent of pollination?  
The sun  
Wind  
Insects (1)

- 2.3 A school in a rural area decided to practise organic farming. They were supposed to use only organic fertilisers to cultivate their vegetables. They collected many organic substances to make a compost heap as shown in the illustration.



- 2.3.1 Mention ONE basic nutrient that the residue of the burning fire could contribute to the heap. (2)
- 2.3.2 Mention the type of nutrient that the bones would provide in the heap. (2)
- 2.4 Identify THREE ways which biotechnology has developed to control pests. (3)
- 2.5 The illustration below indicates vegetative plant propagation.



- 2.5.1 Identify the method of vegetative propagation as illustrated in the above diagrams. (1)
- 2.5.2 Identify the parts labelled A and B. (2)
- 2.5.3 Formulate TWO reasons for the use of the grafting wax in this operation. (2)
- 2.5.4 Integrated pest management is based on three principles. Identify TWO of the principles. (2)

**QUESTION 3**

Start this question on a new page.

**OPTIMAL RESOURCE UTILISATION**

3.1 The picture below shows a traditional farmer turning the soil with cattle before planting.

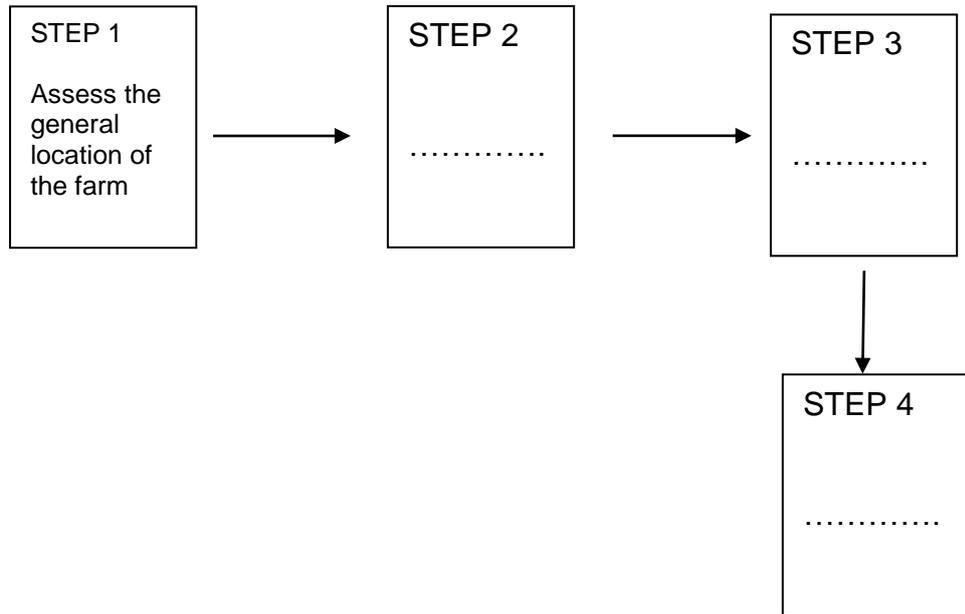


- 3.1.1 Give THREE possible reasons why the farmer is turning the soil upside-down before planting. (3)
- 3.1.2 Identify THREE benefits for the use of animals to plough the fields instead of using tractors. (3)
- 3.1.3 Mention THREE types of erosion that can be caused by water on a bare field. (3)
- 3.1.4 Define the term *primary tillage*. (2)
- 3.1.5 Explain how the following natural resources can be used without impacting negatively on crop production:
  - (a) Running water
  - (b) Sunlight (2)

3.2 A farming community requires an Agricultural Sciences learner to assist them to identify all wetlands on their communal land. Your school teacher nominated you to go and assist the farmers on the field to identify the wetlands.

- 3.2.1 Describe THREE ways of identifying wetlands. (3)

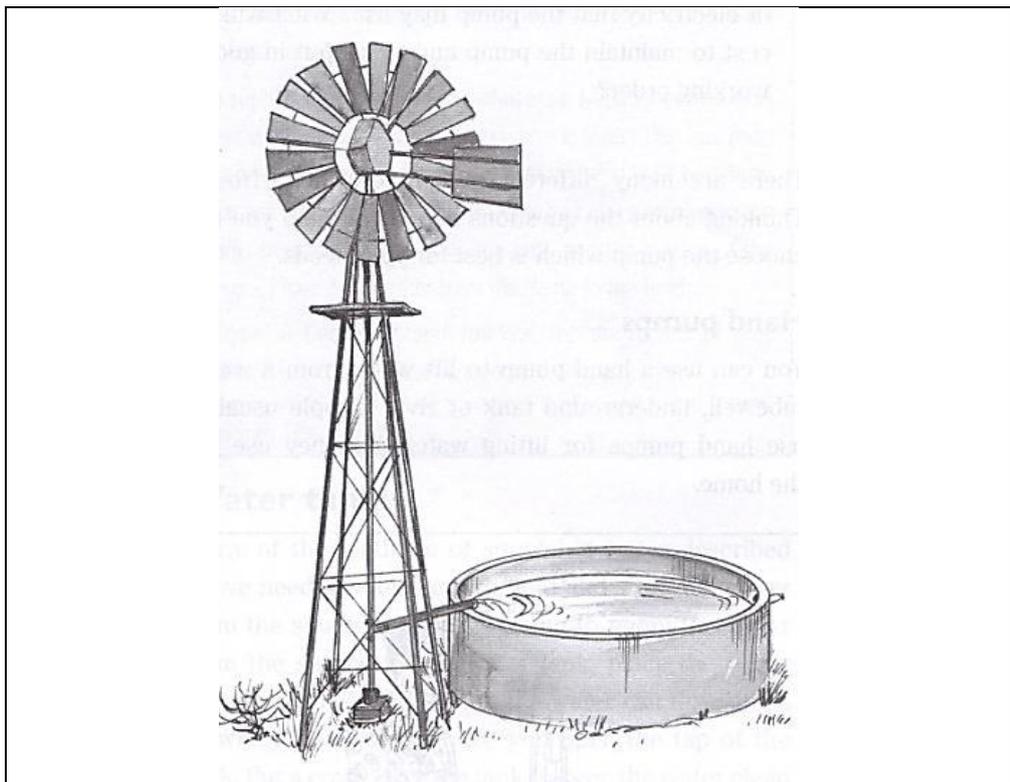
3.2.2 Complete the flow chart below to show the steps to assess the resources on a farm.



(3)

3.2.3 Identify the structure below.

(1)



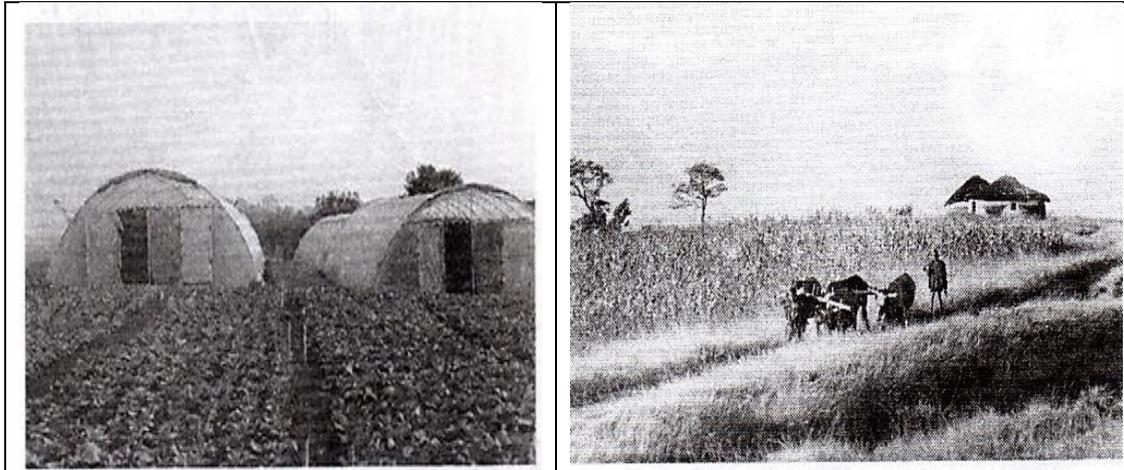
3.2.4 Which climatic factor influences the working of the above structure most?

(1)

3.2.5 State ONE major importance of the structure in QUESTION 3.2.3 in farming.

(2)

3.3 The pictures below depict two systems of agriculture that are practiced by two different farmers.



**FIGURE A**

**FIGURE B**

- 3.3.1 Identify the TWO systems of agriculture in FIGURE A and FIGURE B. (2)
- 3.3.2 Suggest THREE reasons why you think FIGURE A could be a better farming system than FIGURE B in vegetable cultivation. (3)
- 3.3.3 What is drainage? (2)
- 3.3.4 Name TWO disadvantages of open drains in South Africa. (2)
- 3.3.5 Determine the THREE most important irrigation systems used in South Africa. (3)

**[35]**

**QUESTION 4**

Start this question on a new page.

4.1 The table below shows the nitrogen taken up by four crops on a plot.

<b>Crop</b>	<b>Nitrogen taken</b>
Sorghum	23 units
Yams	35 units
Beet root	30 units
Rice	12 units

- 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 Determine the amount by which the nitrogen intake by yams is greater than the nitrogen intake by rice. Show all calculations. (2)
- 4.1.3 Which of the crops require the least nitrogen for growth? (1)
- 4.2 

The Department of Environmental Affairs is spending huge sums of money to eliminate and control alien plants in South Africa.
---
- 4.2.1 Identify THREE problems that alien plants pose to the vegetation of South Africa. (3)
- 4.2.2 State the legislation that controls alien plants in South Africa. (2)
- 4.3 Vegetative or asexual reproduction involves increasing the numbers of plants through parts of plants other than seeds.
- 4.3.1 Indicate THREE advantages of vegetative reproduction. (3)
- 4.3.2 Give TWO examples of plants that are propagated using bulbs. (2)
- 4.4 Suggest THREE reasons why hydroponics is not practised in many farming communities. (3)

4.5 Classify the following plant diseases and pests under the following headings.

4.5.1

Mosaic Rust Nematodes Ring spot Damping off Mites
--

Pest	Viral disease	Fungal

(6)

4.5.2 Critically observe the picture below and state TWO reasons why trees are important to man.



(2)

4.5.3 Outline TWO ways to prevent pests from attacking trees.

(2)

4.5.4 How can pesticides be used responsibly to prevent harmful effects to the environment? Identify THREE ways.

(3)

4.5.5 Suggest TWO reasons why tissue culture in asexual reproduction is done in a laboratory.

(2)

[35]

**TOTAL SECTION B: 105**  
**GRAND TOTAL: 150**



**ANSWER SHEET****AGRICULTURAL SCIENCES P2****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)

