education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

AGRICULTURAL SCIENCE P2

NOVEMBER 2006

MARKS: 150

TIME: 2 hours

This question paper consists of 11 pages and an answer sheet.

INSTRUCTIONS AND INFORMATION:

1. Answer ALL the questions from SECTION A and SECTION B.
2. SECTION A (QUESTION 1) must be answered on the ANSWER SHEET provided.
3. SECTION B (QUESTIONS 2 to 4) must be answered in the ANSWER BOOK.
4. Start each question from SECTION B on a NEW page.
5. Study the questions carefully and make sure you answer what is required.
6. Number your answers correctly according to the numbering system used in this question paper.
7. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various possible options are provided as answers to the following questions. Choose the correct answer and make a cross (X) over the letter (A - D) next to the question number (1.1.1 - 1.1.10) on the ANSWER SHEET provided for SECTION A.

1.1.1 Production capacity is influenced by ...

A wrong types of farming systems.
B rainfall.
C wrong methods of farming.
D soil fertility.

1.1.2 Which ONE of the following best describes the term 'biome'?

A Study of the conditions necessary for survival of living organisms
B Specific area where unrelated groups of animals or plants can be found
C Zone of earth occupied by unrelated animals
D Survival of living organisms in an area

1.1.3 Since ... the World Food and Agricultural Organisation has been studying the impact of HIV/Aids on agriculture, food security, nutrition and farming systems.

A 1988
B 1970
C 2006
D 2000

1.1.4 The following is an example of an indigenous fruit crop:

A Tomatoes
B Grapes
C Peaches
D Amarula

1.1.5 Which ONE of the following Acts deals with issues that promote conservation practices and alien plant control?

A Fencing Act of 1993
B Conservation of Agricultural Resources Act, No. 43 of 1983
C Subdivision of Agricultural Land Act, No. 70 of 1970
D Agricultural Products Standards Act, No. 119 of 1990

1.1.6 ONE of the following is NOT a component of soil:

A Water
B Air
C Living organisms
D Rock minerals

1.1.7 Soil and water can be conserved by ...

A building dams and walls in dongas.
B removing all vegetation from soil.
C building contour walls.
D A and C

1.1.8 The horizon normally found at the top of a soil profile and rich in organic matter:

A R-horizon
B A-horizon
C B-horizon
D C-horizon

1.1.9 Soil … refers to how rough or smooth the particles of the soil are.

A structure
B density
C slope
D texture

1.1.10 ONE of the following factors does NOT cause soil erosion:

A Overgrazing
B Poor farming methods
C Mulching
D Veld fires (10 × 2) (20)

1.2 Each of the following questions consists of TWO statements. Choose the correct statement. If:

– 1st statement is TRUE, mark A
– 2nd statement is TRUE, mark B
– both statements are TRUE, mark C
– both statements are FALSE, mark D

	Statement A		**Statement B**
1.2.1	Shallow soils have a high production potential	**because**	they can accumulate and retain more moisture than deep soils.
1.2.2	Clay soils have a lot of colloids	**because**	they have less secondary minerals than sandy soils.
1.2.3	Trees can reduce the effect of wind blowing across a large field	**because**	it drastically decreases the speed the wind is traveling.
1.2.4	Grasses is the main source of food for livestock	**because**	it is very palatable and cheap.
1.2.5	Maize is an indigenous field crop	**because**	it is a major agricultural product.

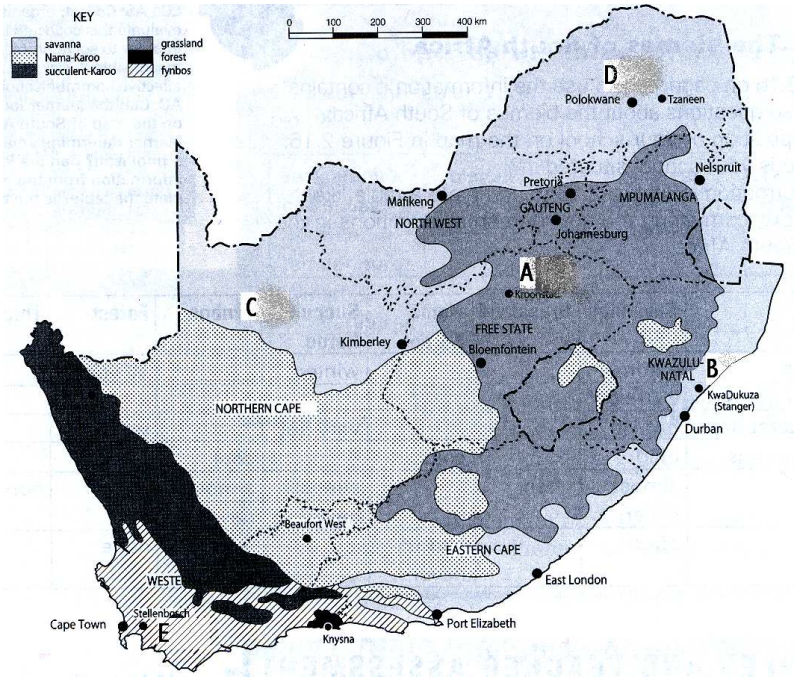
(5 × 2) (10)

1.3 Choose an item/word from COLUMN B that best matches the description/item/ word in COLUMN A:

	COLUMN A		**COLUMN B**
1.3.1	Hydration	A	plant roots grow into cracks and break the rocks
1.3.2	Physical Weathering	B	generally short and deciduous
1.3.3	Indigenous trees	C	bonding of a solid mineral with water to form a new mineral
1.3.4	Gum trees	D	rocks are composed of different minerals each having its own expansion and contraction
1.3.5	Sodium salts	E	poles and roof trusses
		F	determine the quality of water

(5 × 2) (10)

1.4 Refer to the ecological map of South Africa and answer the question that follows:



Study the indicated crops and food sources from plants and match them with the areas as indicated on the map where they are best suited.

A.

B.

C.

D.

E.

(5 × 1) (5)

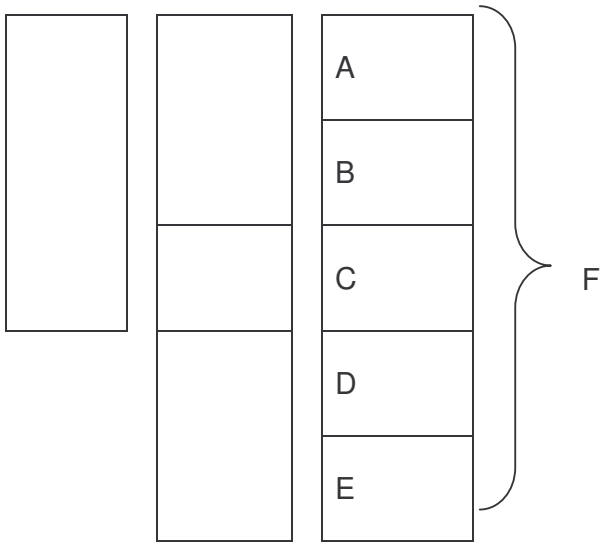
TOTAL SECTION A: 45

SECTION B

QUESTION 2: SOIL SCIENCE

Start this question on a NEW page.

2.1 Study the schematic representation of a soil profile and answer the questions that follow:



2.1.1 Identify the letters A - F. (6)
2.1.2 Define the term *soil profile*. (2)

2.2 Name FOUR soil forming factors. (6)

2.3 Tabulate THREE differences between primary and secondary minerals. (2)

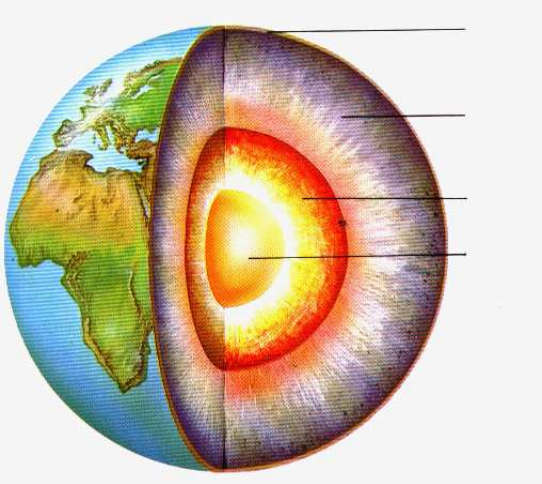
2.4 The following table shows primary rock minerals, their occurrence, properties and product of weathering. Complete the table by giving the correct answer in place of the question numbers.

Mineral	Occurrence	Properties	Product of weathering
Quartz	Earth's crust	2.4.1	2.4.2
Calcite	2.4.3	Colourless/ White or yellow	2.4.4

(4)

2.5 Name THREE fundamental components of soil. (3)

2.6 QUESTIONS 2.6.1- 2.6.4 refer to the diagram below.



2.6.1 With the help of the diagram, explain TWO facts which prove that the earth core is still very hot. (2)

2.6.2 Supply the labels for A, B, C and D. (4)

2.6.3 Which forces of nature are responsible for the formation of metamorphic rocks and what gives rise to those forces? (2)

2.6.4 What causes the typical layered appearance of sedimentary rocks? (2)
[35]

QUESTION 3: PLANT SCIENCES

Start this question on a NEW page.

3.1 Fodder crops play an important role in supporting the agricultural industry.

3.1.1 How can fodder crops be utilised as cash crops? (2)

3.1.2 Name TWO indigenous grasses that can be used as pastures. (2)

3.1.3 These crops are mostly used under dry land conditions. Name THREE factors that must be considered to ensure sustainable production. (3)

3.2 Give ONE example of the following vegetable crops:

3.2.1 Legume
3.2.2 Leaf
3.2.3 Bulb
3.2.4 Fruit bearing (4)

3.3 Name the FOUR groups into which fruit can be divided. (4)

3.4 The table below indicates the gross value and production of various crops in South Africa for 2002:

Field crops	Gross value ('000t)	Production ('000t)
Maize	13 906	10 073
Wheat	4 213	2 331
Grain sorghum	382	255
Sugar cane	3 284	23 013
Ground-nuts	322	133
Sunflower seed	2 160	965
Total	**27 966**	
Vegetables and fruit		
Viticulture (table grapes excluded)	2 088	83 000 litres
Citrus	2 915	1 896
Subtropical fruit	941	616
Deciduous and other fruit	4 396	1 602
Vegetables	3 522	2 050
Potatoes	2 438	1 540
Total	**17 424**	

3.4.1 Maize is regarded as one of the most important crops in South Africa. Briefly explain this statement. (4)

3.4.2 Which crop has the highest production in tons/litres? The product of this crop is known as ... (2)

3.4.3 Why is the production of the crop in QUESTION 3.4.2 indicated in litres and not in tons like the others? (2)

3.4.4 Why is the gross value of deciduous fruits significantly higher per unit than the other crops? (2)

3.5 Discuss crop production under each of the following headings:

3.5.1 Soil (2)
3.5.2 Temperature (2)
3.5.3 Rainfall (2)

3.6 Name FOUR crops that are successfully grown at low temperatures. (4)

[35]

QUESTION 4: OPTIMAL RESOURCE UTILISATION

Start this question on a NEW page.

4.1 4.1.1 Briefly explain what *soil degradation* means. (2)

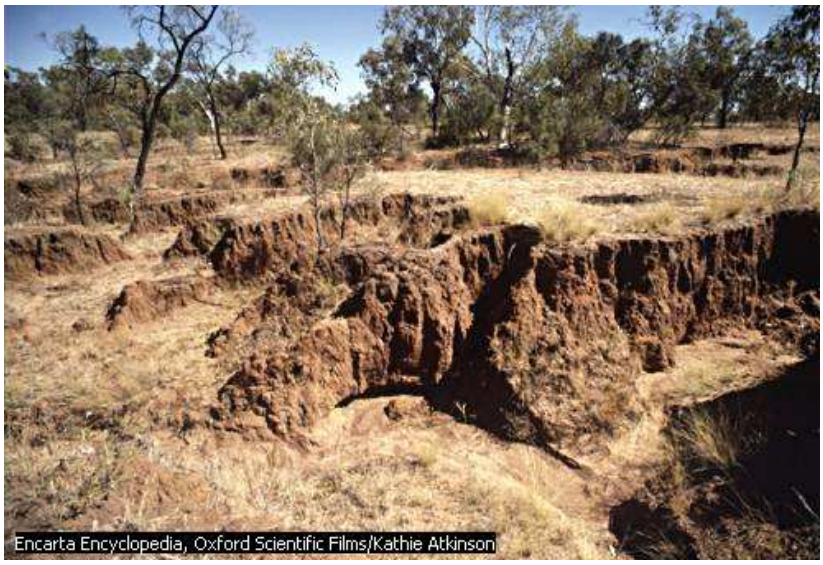
4.1.2 Name FOUR ways through which farmers contribute to soil degradation. (4)

4.2 4.2.1 Explain what is meant by a *resource*. (2)

4.2.2 Identify FOUR important resources in agriculture. (4)

4.2.3 Differentiate between a primary and secondary resource. (4)

4.3



4.3.1 Briefly explain FIVE measures that you would implement to prevent soil erosion. (5)

4.3.2 Name TWO ways in which the veld condition could be improved. (2)

4.4 **Case study**

South Africa loses between 300 - 400 million tons of soil every year. For every ton of maize, wheat and sugar produced South Africa loses an average of 20 tons of soil. Replacing the soil nutrients carried to the sea by rivers each year with fertilizer would cost R1 000 million. The United Nations estimates that five to seven million hectares of productive land are lost globally through erosion each year

4.4.1 Why is it important to use our agricultural resources wisely? (2)

4.4.2 What is the impact of soil erosion in South Africa? (3)

4.4.3 What is the result of soil erosion globally? (1)

4.5 Indicate FOUR ways through which water can be used wisely in agriculture. (4)

4.6 Name the legislation that deals with the conservation of natural resources. (2)
[35]

TOTAL SECTION B: 105

GRAND TOTAL: 150

SECTION A

ANSWER SHEET

NAME ……..

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

QUESTION 1.2

1.2.1	A	B	C	D
1.2.2	A	B	C	D
1.2.3	A	B	C	D
1.2.4	A	B	C	D
1.2.5	A	B	C	D

QUESTION 1.3

1.3.1 ……...

1.3.2 ……

1.3.3 ……

1.3.4 ……

1.3.5 ……

QUESTION 1.4

A ……

B ……..

C ……

D ……

E ……