education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

AGRICULTURAL SCIENCES P1

EXEMPLAR 2007

MEMORANDUM

This memorandum consists of 7 pages.

SECTION A / AFDELING A

QUESTION 1.1 / VRAAG 1.1

1.1.1	**A**	**B**	**C**	**X**
1.1.2	**A**	**X**	**C**	**D**
1.1.3	**A**	**B**	**X**	**D**
1.1.4	**X**	**B**	**C**	**D**
1.1.5	**A**	**B**	**C**	**X**
1.1.6	**A**	**B**	**C**	**X**
1.1.7	**X**	**B**	**C**	**D**
1.1.8	**A**	**B**	**X**	**D**
1.1.9	**A**	**X**	**C**	**D**
1.1.10	**A**	**X**	**C**	**D**

QUESTION 1.2 / VRAAG 1.2

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

QUESTION 1.3 / VRAAG 1.3

1.3.1 silt

1.3.2 Field water capacity

1.3.3 ions

1.3.4 Bacteria or protozoa

1.3.5 cellulose

1.3.6 autotrophic

1.3.7 Maltose/ disaccharide

1.3.8 Haematite / Iron

1.3.9 glycogen

1.3.10 physical/mechanical weathering

QUESTION 1.4 / VRAAG 1.4

1.4.1	displace other in sequence of liotrope series divalent ions like Ca2+ replace two monovalent ions	(2)
1.4.2	Al 3^+ Aluminum	(1)
1.4.3	a)hydrogen ions (H^+)	
	b)Calcium ions (Ca^{2+}) Magnesium ions (Mg^{2+})	(2) [5]

START THIS QUESTION OF SECTION B ON A NEW PAGE

SECTION B

QUESTION 2: BASIC CHEMISTRY.

2.1.1 Ionic bond-Transfer of one electron from the one atom to the other. (2)

2.1.2 Covalent bonds- Atoms share a pair of bonding electrons (2)
[4]

2.2.1 A – Glucose
B – Fat molecule
C – Glycerol
D – Amino acid
E – Butanic acid (5)

2.2.2 Glycerol and butanic acid (alcohol) (2)

2.2.3 A (2)

2.2.4 Starch
Glycogen
Dextrin
Cellulose (4)

2.2.5 D – Carboxyl group (4)
E – Amino and Carboxyl group
[17]

2.3.1 A - Colloidal solution
B – Suspension
C - True solution (3)

2.3.2 C (2)

2.3.3 Tyndall effect (3)
Light beam travel through the colloidal system path can be seen clearly with out deflection of light. (2)

2.3.4 B

2.3.5 Hydrochloric acid will dissociate in water
H^+ ions attaches to negative pole of H_2O Hydrated cations H_3O+ and H^+ ions bind colloids – flocculation take place (4)

[35]

QUESTION 3: SOIL SCIENCE: Classification, Profiles and properties

3.1.1
I. O-horizon
II. A- horizon
III. B- horizon
IV. C- horizon (4)

3.1.2 Illuvial-Mineral salts are washed in or carried from the O/A horizon to the B-horizon (2)

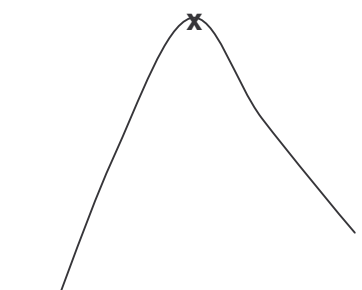
Elluvial - Export of soil minerals are washed out from the A horizon in to the B horizon. (2)

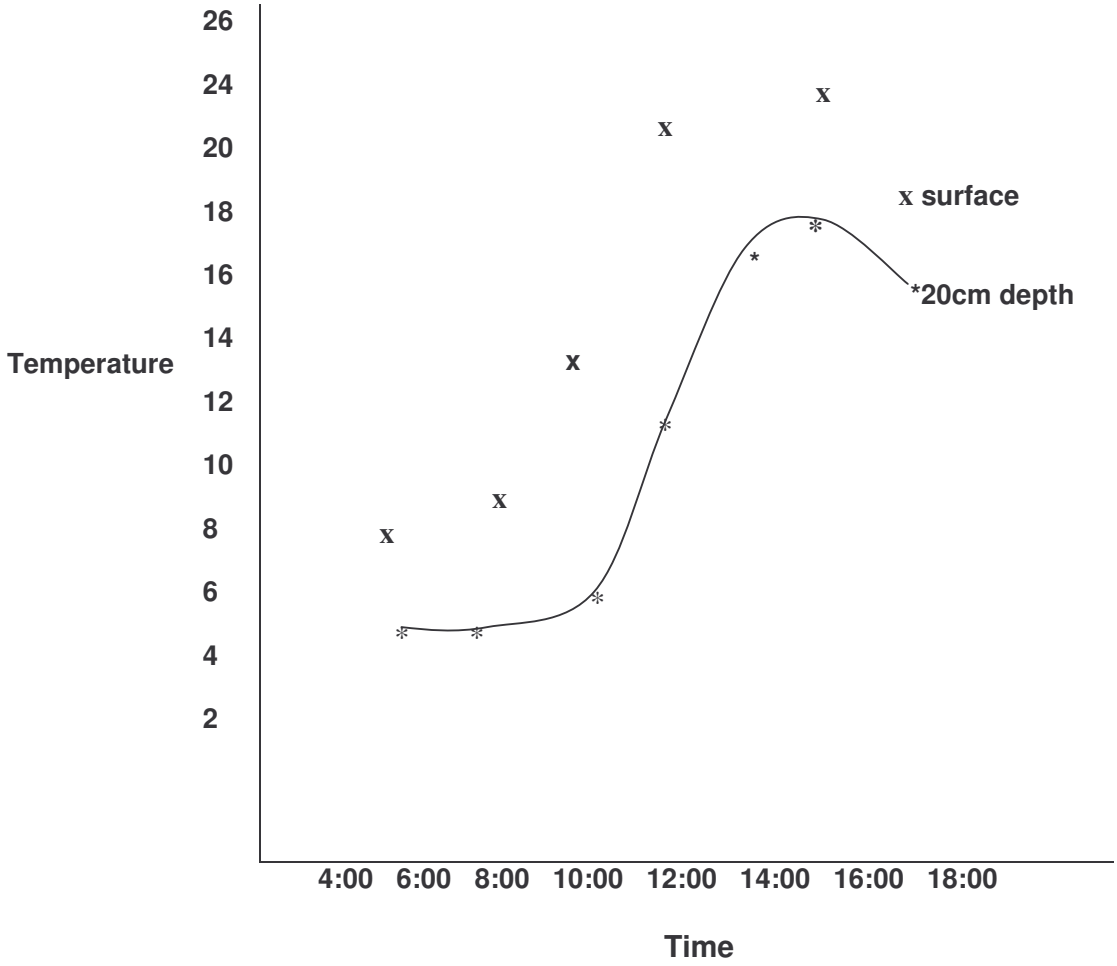
3.1.3
- climate
- vegetation
- topography
- man and his activities
- age (four only) (4)

3.1.4
- occurs usually at the surface
- developed through accumulation of organic matter
- mixed with mineral fraction (3)

3.1.5 Irrigation –structural development for water capacity
Drainage- soil forms
Chemical adjustments- soil samples
Soil preparation- creates favourable physical conditions. for germination
Crop adaptation- better adapted under specific conditions. (2)

3.2.1





Use the following rubric to mark this question:

CRITERIA	INDICATORS		
Use of space	Not in proportion, incorrect size and wrong scale. 0	In perfect proportion or correct size or correct scale 1	In perfect proportion and correct size and correct scale 2
Correctness	Not a lines graph, incorrect values and no headings 0	Line graph or correct headings. 1	Lyn graph and correct values and correct headings. 2
Neatness	No neat lines and did not use a ruler for lines and no measured distances 0	Neatly drawn lines or used a ruler for lines or measured distances. 1	Neatly draw lines and used a ruler for lines and measured distances. 2
TOTAL			

(6)

3.2.2 Surface-14:00
20 cm depth-16:00

(2)

3.2.3

- Daily variation in the soil temperatures decreases with increase in depth in the soil (2)
- Minerals –higher heat conductivity as air (1)
- The densely the particles are packed , the less air there is, (1)
- The more heat conducted to the deeper layers of soil (1)
- Moist air will therefore heat up much slower than dry so (1)

3.2.4

- Day and night temperature variation will be reduced
- the denser the plant cover, the less radiation /heat energy will be received by the soil,
- less heat will be lost during the night due to radiation
- Vegetation acts as a buffer to temperature variation in the soil (4)

[35]

QUESTION 4: SOIL SCIENCE: Chemical, Colloidal properties and soil microbiology.

4.1.1 a. Clay (2)
b. Sand (2)

4.1.2
- Darker in colour becomes warmer
- Promoted a crumb structure
- Water absorption improved
- Water holding capacity is improved
- Well aerated and well drained,
- Easily cultivated
- Does not become compacted
- Less water and wind erosion

(8)

4.1.3
- Kaolinite
- Montmorillonite
- Illite
- Vermiculite
- Chloride

(4)

4.2.1 Soil flora
- protozoa
- bacteria
- fungi

Soil fauna
- earthworms
- ants
- termites

(6)

4.2.3
- nitrogen
- sulphate

(2)

4.2.4
- Decomposition of plant and animal residues
- Liberation of nutrients
- Liberation of carbon dioxide
- Improvement of soil structure
- Transformation of other essential mineral elements (any two)

(2)

4.3.1 Alkalinity (Black brack)
- Sodium carbonate

Salinity (White brack)
- Chlorides and Sulphates of sodium and calcium

(2)

4.3.2
- Salts can be toxic to plants
- Soil surface becomes powdery
- Causes plasmolysis in plant cells

(3)

4.3.3

- Absorbs water with difficulty
- Poorly drained and aerated
- Difficult to cultivate
- Usually cold

(4)

[35]

TOTAL SECTION B: 105
TOTAL PAPER: 150