



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2012

**AGRICULTURAL SCIENCES P1
MEMORANDUM**

MARKS: 150

This memorandum consists of 7 pages.

ANSWER SHEET

AGRICULTURAL SCIENCES P1

NAME AND
SURNAME

Memorandum

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

(10x2) (20)

QUESTION 1.2

	ONLY A	ONLY B	BOTH A and B	None
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

(5x2) (10)

QUESTION 1.3

- 1.3.1 Carbonic acid ✓✓
- 1.3.2 Field water capacity ✓✓
- 1.3.3 Cation adsorption ✓✓
- 1.3.4 Covalent ✓✓
- 1.3.5 Global warming ✓✓

(5x2) (10)

QUESTION 1.4

- 1.4.1 Isotopes ✓
- 1.4.2 Drainage ✓
- 1.4.3 Tillage ✓
- 1.4.4 Neutralisation ✓
- 1.4.5 Lignin ✓

(5x1) (5)

45

TOTAL SECTION A: 45

SECTION B

QUESTION 2 BASIC CHEMISTRY

2.1 2.1.1 Colloids ✓ (1)

2.1.2 The molecules of a substance forming a solution are homogeneously dispersed among each other. ✓✓ (2)

2.1.3 Colloidal dispersion refers to the particles that are floating and not settle down at the bottom of the container. ✓ Colloidal suspension refers to the particles that can settle down to the bottom of the container. ✓ (2)

2.2 2.2.1 Molecular formula of ethane ✓ (1)

2.2.2 Amino group (-NH₂) ✓ and Carboxyl group (-COOH) ✓ (2)

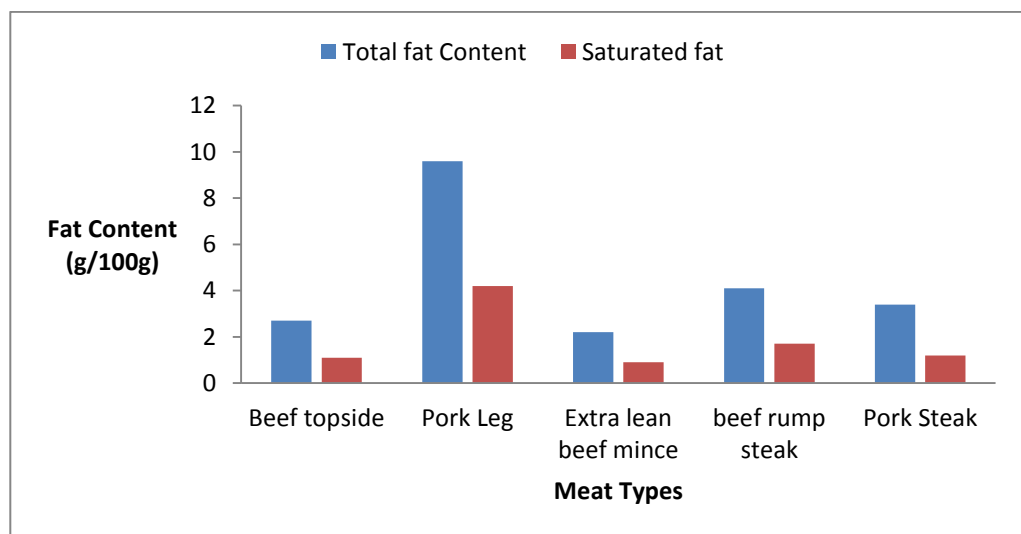
2.2.3 Peptide linkage/bond ✓ (1)

2.2.4 Carbohydrates ✓ (1)

2.2.5 C₁₂ H₂₂O₁₁ ✓ (1)

2.2.6 Fat molecule/Ester/Glycerolbutyrate ✓ (1)

2.3 2.3.1



- Labelling of axes ✓
 - Title of the graph ✓
 - Differentiation between the two bars ✓
 - Correctness of scale ✓
 - Proper plotting of graph ✓
 - Correct type of graph ✓
- (6)

2.3.2 • Obesity ✓
• High blood pressure ✓
• Blocking of blood veins ✓
• Diabetic ✓
• Epileptic fits ✓
(Any 2) (2)

2.3.3 • Energy source ✓
• Protection and insulation ✓
• Waterproofing. ✓
• Form part of cell membrane ✓ (2)

(Any 2)

- 2.4 Matter is anything that has mass and takes up space. ✓✓
Atoms are the basic units or the building block of all matter. ✓✓ (4)
- 2.5 Ruminants ✓✓ (2)
- 2.6 2.6.1 Fermentation/Decomposition ✓ (1)
- 2.6.2 (i)
$$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$$
 ✓✓ (ii) Ethanol ✓ (3)
- 2.6.3
- No production ✓
 - Absenteeism from work ✓
 - Health risk ✓
 - Death of farm workers ✓
- (Any 3) (3)

[35]**QUESTION 3 SOIL SCIENCE**

- 3.1 3.1.1 Carbon cycle ✓ (1)
- 3.1.2 Microbial decay ✓ (1)
- 3.1.3 Consumption ✓ (1)
- 3.1.4 Carbon dioxide ✓ (1)
- 3.1.5
- No plant life ✓
 - No animal life ✓
 - No photosynthesis ✓
 - Extinction of living things ✓
 - No organic compounds ✓
 - Absence of carbon dioxide ✓
- (Any 2) (2)

	CLAY	SAND
3.2 3.2.1 Cohesion	Very good/Great ✓	None ✓
3.2.2 Capillarity	Very great ✓	Very low ✓
3.2.3 Water holding capacity	Very strong ✓	Very low/Weak ✓

- 3.3 3.3.1 Soil is classified under two systems that are soil form and soil series. ✓ (1)
- 3.3.2
- For the optimum utilisation of natural resources ✓
 - For scientific planning of a farm ✓
 - Planning camps ✓
 - Valuation of soil ✓
 - Development of new region ✓
- (Any 2) (2)

- 3.4 3.4.1 A = Loam ✓
B = Sand ✓
C = Clay ✓ (3)
- 3.4.2 Sample A ✓ (1)
- 3.5 3.5.1 W ✓ (1)
- 3.5.2 Cool, colder soil (clay soil are normally more wet). ✓ (1)
- 3.6 3.6.1 P = Parent ✓
R = Region/Relief/Topography ✓
CL = Climate ✓
O = Organism ✓
T = Time ✓ (5)
- 3.7 3.7.1 Bulk density = $\frac{\text{Mass of oven dried soil}}{\text{Volume of oven dried soil}}$ ✓
= $\frac{680 \text{ g}}{80 \text{ cm}^3}$ ✓
= $8,5 \text{ g/cm}^3$ ✓ (3)
- 3.7.2 50: 25: 25 ✓ (1)
- 3.8 3.8.1 A = Prism like/Prismatic/Columnar ✓
B = Crumb/amorphous ✓
C = Platy ✓
D = Blocky ✓ (4)
- 3.8.2
- Wetting and drying of soil ✓
 - Climate ✓
 - Plant roots ✓
 - Colloidal matter of the soil ✓
 - Type of clay mineral present in the soil ✓
- (Any 1) (1)

QUESTION 4 SOIL SCIENCE

- 4.1 4.1.1 a= transpiration/transpiration losses ✓
 b = Soil surface evaporation ✓
 c = Run of/Storm water erosion ✓
 d = seepage/percolation/saturated flow/leaching ✓ (4)
- 4.1.2 • Controlled irrigation ✓
 • Addition of organic matter ✓
 • Cover the soil with plant cover/vegetation ✓ (Any 2) (2)
- 4.1.3 Seepage is the downward movement of water into the soil without
 being absorbed by the roots. ✓
- Capillarity is the upward movement of soil water from the soil water
 table through the micro pores. ✓ (2)
- 4.2 4.2.1 Macro pores ✓
 Micro pores ✓ (2)
- 4.2.2 Fine texture/Fine textured soil ✓ (1)
- 4.2.3 • Crust is easily formed ✓
 • Air circulation very slow ✓
 • Clay soil is hard to till ✓
 • Water logging occurs very easily ✓
 • Absorption of water is extremely slow ✓
 • Water retention capacity very slow ✓
 • No drainage ✓
 • Water movement is extremely slow ✓
 • Limit the root growth due to cohesiveness ✓ (Any 4) (4)
- 4.3 4.3.1 A =Orientation of land/slope/Topography ✓
 B = Radiation and the reflection of sun's energy from the soil ✓
 C = Vegetation/ground cover ✓
 D = Soil depth ✓ (4)
- 4.3.2 • At high temperature seed germinate quicker. ✓
 • Soils microbes prefer high soil temperature. ✓
 • Morning sun has a great influence on the ripening process of
 crops. ✓
 • Soil chemical reaction also takes place at high soil temperature. ✓
 • 25 °C is the optimum temperature for growth and production of
 crops ✓
 • Warm soil delivers early crops and cold soil late crops ✓
 • At high temperature soil water dissolves more plant nutrients ✓
 (Any 2) (2)

- 4.4 4.4.1 (a) Acidic ✓ (1)
(b) Strongly alkaline ✓ (1)
(c) Extremely acidic ✓ (1)
(d) Alkaline ✓ (1)
(e) Slightly acidic ✓ (1)
- 4.4.2 Neutral = 6,6 – 7,5 ✓ (1)
- 4.5 4.5.1
- Improves soil structure ✓
 - The pore spaces increases due to structure formation ✓
 - Soil infiltration rate of water improves ✓
 - Cultivation of soil improves ✓
 - More heat will be absorbed ✓
 - Erosion by water and wind is reduced ✓ (Any 2) (2)
- 4.5.2
- Bacteria ✓
 - Protozoa ✓
 - Fungi ✓
 - Algae ✓
 - Actinomyces ✓ (Any 4) (4)
- 4.5.3
- Decomposition of plant and animal residues ✓
 - Liberation of nutrients and carbon dioxide ✓
 - Nitrogen fixation and transformation ✓
 - Food processing and spoilage ✓
 - Mutualism e.g. Rhizobium bacteria ✓ (Any 2) (2)
- [35]

TOTAL SECTION B: 105

GRAND TOTAL: 150