basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

# AGRICULTURAL TECHNOLOGY

## EXAMINATION GUIDELINES

## GRADE 12

## 2017

**These guidelines consist of 9 pages.**

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## 1. INTRODUCTION

The Curriculum and Assessment Policy Statement (CAPS) for Agricultural Technology outlines the nature and purpose of the subject Agricultural Technology. This guides the philosophy underlying the teaching and assessment of the subject in Grade 12.

The purpose of these Examination Guidelines is to:

- Provide clarity on the depth and scope of the content to be assessed in the Grade 12 National Senior Certificate Examination in Agricultural Technology.
- Assist teachers to adequately prepare learners for the examinations.

This document deals with the final Grade 12 external examinations. It does not deal in any depth with the School-Based Assessment (SBA), Practical Assessment Tasks (PATs) or final external practical examinations, as these are clarified in a separate PAT document which is updated annually.

These Examination Guidelines should be read in conjunction with:

- The *National Curriculum Statement (NCS) Curriculum and Assessment Policy Statement (CAPS)*: *Agricultural Technology*
- The *National* Protocol of Assessment: *An addendum to the policy document, the National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF), regarding the National Protocol for Assessment (Grades R–12)*
- The *national* policy pertaining to the programme and promotion requirements of the National Curriculum Statement, Grades R–12

## 2. ASSESSMENT IN GRADE 12

### 2.1 External assessment in Grade 12

The external examination for Agricultural Technology Grade 12 will consist of one paper that contains six questions and counts 200 marks. The duration of the paper will be 3 hours. All the questions are compulsory.

The breakdown of questions is as follows:

| QUESTIONS | CONCEPTS COVERED | MARKS |
|---|---|---|
| Q 1 | Multiple-choice questions can cover all content areas (10 x 2)<br>One word/concept (5 x 2)<br>Column A/Column B (5 x 2) | **20**<br>**10**<br>**10** |
| Q 2 | Structural materials and related drawings, measurements and safety | **35** |
| Q 3 | Electrical energy and related tools, materials and safety | **20** |
| Q 4 | Skills and construction processes and related tools, materials, drawings, measurements and safety | **35** |
| Q 5 | Tools, implements and equipment and related tools, materials, drawings, calibrations and safety | **40** |
| Q 6 | Irrigation and water supply. Related tools, materials, drawings and measurements and communication | **30** |
| **TOTAL** | | **200** |

## 2.2 Cognitive levels

| Categories of complexity | Description of categories | Some examples | Weighting |
|---|---|---|---|
| Remembering | Recalling information | Recognising, listing, describing, retrieving, naming, finding, give labels and state or identify functions, processes, mechanisms, etc. | **± 40%** |
| Understanding and application | Using information in another familiar situation. Explain ideas or concepts. | Implementing, carrying out, using, executing, interpreting, summarising, paraphrasing, classifying and explaining processes, mechanisms; make direct deductions from data given; do calculations, interpreting data; explaining adaptations or environmental factors influencing effectiveness; draw flow charts or mind maps to illustrate processes or mechanisms; constructing tables and graphs to organise and present data; drawing sketches to investigate concepts; communicate findings and applying formulae | **± 40%** |
| Creating, evaluation and analysing | Generating new ideas. Justifying a decision or course of action. Breaking information into parts to explore understandings and relationships. | Designing, constructing, planning, producing, inventing, checking, hypothesising, critiquing, experimenting, judging, comparing, organising, deconstructing, interrogating and finding | **±20%** |
| **TOTAL** | | | **100%** |

## 2.3 Programme of assessment

The programme of assessment is designed to spread formal assessment tasks in all subjects in a school throughout a term.

| SBA (25%) | | End-of-year assessment (75%) |
|---|---|---|
| Term 1 – 100<br>Term 2 – 100<br>Term 3 – 100 | **Practical assessment task:**<br>100 | **End-of-year examination:**<br>200 |
| **100** | **100** | **200** |
| • Internally set<br>• Internally assessed<br>• Externally moderated<br>• Recorded on computerised SBA mark sheets provided by the provincial assessment body | • Internally set<br>• Internally assessed<br>• Externally moderated<br>• Recorded on computerised PAT mark sheets provided by the provincial assessment body | • Externally set<br>• Externally assessed<br>• Externally moderated<br>• Externally recorded |
| **Total mark: 100 + 100 +200 = 400** | | |

## 3. ELABORATION OF THE CONTENT FOR GRADE 12 (CAPS)

The final examination in Agricultural Technology Grade 12 will cover the knowledge and skills outlined below.

| | |
|---|---|
| **Safety** | Safety hazards: three steps of a hazard control system<br>OHS Act: farm safety regulations according to the OHS Act for:<br>• Hazards associated with the farm environment<br>• Tractor safety<br>• Noise pollution<br>• Basic general safety regulations |
| **Structural materials** | Metal alloys<br>Synthetic materials<br>Electric fences |
| **Energy** | Alternative energy:<br>• Wind energy<br>• Solar energy<br>• Geothermal energy<br>• Bio-energy |
| **Construction processes** | Advanced welding techniques:<br>• $CO_2$ welding<br>• Advanced welding joints and their applications<br>• Oxy-acetylene cutting<br>• Plasma cutting |

| | |
|---|---|
| **Tools and equipment** | Harvesting or processing machines/equipment:<br>Tractor systems<br>• Tractor hydraulic systems<br>• Three-point coupling of a tractor<br>• Mass displacement and pulling force of a tractor<br>• Drive systems<br>• Components of the drive system of a vehicle<br>• Pneumatic and hydraulic tools: identification and functions<br>Economics associated with tractors, equipment and tools |
| **Irrigation and water supply** | Overhead irrigation systems (macro irrigation systems):<br>• Irrigation scheduling<br>• Water measuring techniques and devices used in conjunction with effective water scheduling<br>Waste water removal:<br>• Drainage systems used to get rid of access water around farm buildings.<br>Water purification/softening |
| **Communication** | Computer control programs:<br>• Irrigation control systems<br>• Computers controlling and monitoring engines, implements and equipment<br>• Computer technology information<br>• Global positioning systems (GPS)<br>• Computerised information systems (CIS)<br>• Variable rate technology (VRT)<br>• Remote sensing<br>Different types of communication systems<br>Sources for knowledge, skills and information<br>Exhibitions, seminars, agricultural unions, discussion groups |
| **Drawings** | Freehand design drawings of structures, buildings or implements<br>Introduce and familiarise learners with basic software programs for designing buildings, structures or machine parts. |
| **Measurements, calculations and calibrations** | Problem-solving in data collected:<br>• Use data, collected from measurements and cost calculations in purpose-made fabrications<br>• Effective use of tools, equipment and implements due to correct measurements, calibrations and adjustments |

## 4. GENERAL INFORMATION

### 4.1 Quantities, symbols and units

The most common quantities, symbols and SI units used in introductory Physics are listed below.

A quantity should not be confused with the units in which it is measured.

#### 4.1.1 Formulae

- **Determining the speed of a pulley**
  Na X Da = Ng X Dg
  Na = Speed of drive pulley
  Da = Diameter of drive pulley
  Ng = Speed of driven pulley
  Dg = Diameter of driven pulley

- **Determining speed ratios of pulleys**
  Ratio = $\frac{\text{Drive gear}}{\text{Driven gear}}$

- **Calculate the flow rate in a water system**
  Flow rate = $\frac{\text{Content}}{\text{Time}}$

#### 4.1.2 Units and their symbols

**Metals**

- Copper Cu
- Tin Sn
- Zinc Zn
- Brass Cu Zn
- Bronze Cu Sn

**Synthetic materials**

- Glass fibre
- Vesconite
- Teflon

## 4.2 Recommended resources

### Approved textbooks

Grade 10
Notes from the Department of Basic Education

Grade 11
Notes from the Department of Basic Education

Grade 12
Notes from the Department of Basic Education

## 4. CONCLUSION

It is envisaged that this Examination Guidelines document will serve as an instrument to strengthen and empower teachers to set valid and reliable assessment items in all their classroom activities.

This Examination Guidelines document is meant to articulate the assessment aspirations espoused in the CAPS document. It is therefore not a substitute for the CAPS document which teachers should teach to.

Qualitative curriculum coverage as enunciated in the CAPS cannot be over-emphasised.