education

Department:
Education
REPUBLIC OF SOUTH AFRICA

AGRICULTURAL TECHNOLOGY

GUIDELINES FOR PRACTICAL ASSESSMENT TASK

2010

These guidelines consist 16 pages.

1. The Practical Assessment Task for Agricultural Technology

The Practical Assessment Task in Grade 12 is **externally** set and moderated, but internally assessed. The project is completed under controlled conditions and is assessed by means of a rubric. The PAT counts 25% of the total promotion mark in Grade 12. The learners should know the assessment criteria before they start with the task.

The Practical Assessment Task for Agricultural Technology consists of a design portfolio (25 marks) and a final product (75 marks).

In 2010, the PAT for Agricultural Technology requires learners to design and make a driveway gate that can be used on a farm.

The Design Portfolio

The **design portfolio** should include evidence of how the design and production of the driveway gate was approached. This includes:

- The planning process
- The investigations or research undertaken, and
- The technological process followed
- The materials used
- The safety and environmental aspects considered
- The calculations used – if applicable, sketches or diagrams
- The starting time and ending time – how long it took to complete from start to finish
- Any other information that is relevant to the project
- Knowledge and skills acquired during the production process

The PAT should be completed over the following TWO phases:

Phase 1: Design: Learners must investigate the project, generate ideas and arrive at possible solutions to design the gate. The evidence of this phase will be located in the design portfolio and this phase will be undertaken during the first term.

Phase 2: Production: Learners make the driveway gate at the start of the second term and finish it by the end of the third term.

Note: Learners submit the driveway gate for assessment by the end of the third term. The accompanying planning done in phase 1 (design portfolio) must also be submitted for assessment at the end of the 3rd term. Phase 1 and Phase 2 will be assessed simultaneously.
If the design solution does not lend itself to a full-scale artefact, a scaled model or a representation can be produced. (25%) However, in the latter instance, the learner is expected to provide full-size sections showing construction details including relevant surface finishing. A model can indicate the context in which the product is to be used.

Resources required for this project are:

- Square tubing, 25 mm, 19 mm and 12 mm, quantity depending on design
- Hinges
- Latch or bolt
- Padlock hasp
- Welding kit with suitable consumables and safety equipment

The Design Portfolio (25 marks)
The Design portfolio will be done in the first term.

The **design portfolio** should include evidence of how the development of the gate was approached.

- The investigations or research undertaken (need to give details of all resources used including web sites, etc.)
- The planning process; details of the process followed
- The technological process followed; how effective was the process
- The materials, tools, equipment used
- The safety and environmental aspects considered; show awareness and knowledge of safety regulations to deliver the product
- The calculations used – if applicable, sketches or diagrams; provide different sketches as part of the solution
- The starting time and ending time – how long it took to complete from start to finish
- Any other information that is relevant to the project.

At the beginning of the second, learners will start with the **construction** of a driveway gate for the farm.

The criteria for assessing the manufacturing of the gate (**50 marks**) are:

- Safe handling of tools/equipment (face moderation) - demonstrates sufficient knowledge and awareness of all applicable safety measures and preventative measures
- Skills relating to handling of tools and equipment - demonstrate knowledge and skills related to maintenance and use of tools and equipment
- Knowledge of materials - knowledge of materials and their properties, concepts and principles to solve problems
- Process Techniques - knowledge of correctly selected and applied techniques considering possible constraints
- Skills used in process - demonstrate sufficient knowledge of skills needed and considering relevant constraints

The criteria for assessing the quality of the gate (**25 marks**) are:

- The gate fulfils the purpose for which it was designed and shows innovation that is appropriate
- Appearance: dimensions and/or finishing off - product's appearance is very acceptable and shows innovation
- Calculations/calibrations - evidence of calculations to render product operational.
- The product is complete and operates / functions well
- Time management-how you have managed time
- Portfolio presentation - portfolio must show creativity

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AGRICULTURAL TECHNOLOGY

GRADE 12

PRACTICAL ASSESSMENT TASK

2010

GUIDELINES FOR LEARNERS

PRACTICAL ASSESSMENT TASK

Introduction:
In the Agricultural Technology PAT you will construct a driveway gate. You will use your skills and knowledge in Agricultural Technology to engage in this project.

The Design Portfolio (25 marks)
The Design portfolio will be done in term 1.

The **design portfolio** should include evidence of how the development of the gate was approached, that is:

- The investigations or research undertaken (need to give details of all resources used including websites, etc), and
- The planning process; details of the process followed
- The technological process followed; how effective was the process
- The materials used
- The safety and environmental aspects considered; show awareness and knowledge of safety regulations to deliver the product
- The calculations used – if applicable, sketches or diagrams; provide different sketches as part of the solution
- Calculations/calibrations – evidence of calculations to render product operational.
- The starting time and ending time – how long it took to complete from start to finish
- Any other information that is relevant to the project
- Presentation of portfolio – must show creativity

At the beginning of the second term, you will construct a driveway gate for the farm.

The criteria for assessing the manufacturing of the gate (50 marks) are:

- Safe handling of tools/equipment (face moderation) - demonstrates sufficient knowledge and awareness of all applicable safety measures and preventative measures
- Skills relating to handling of tools and equipment - demonstrate knowledge and skills related to maintenance and use of tools and equipment
- Knowledge of materials - knowledge of materials and their properties, concepts and principles to solve problems
- Process techniques - knowledge of correctly selected and applied techniques considering possible constraints
- Skills used in process - demonstrate sufficient knowledge of skills needed and considering relevant constraints

The criteria for assessing the quality of the gate (25 marks) are:

- The gate fulfils the purpose for which it was designed and shows innovation that is appropriate.
- Dimensions and measurements of the final product.
- Appearance: finishing off - product's appearance is acceptable and shows innovation
- The product is complete and operates /functions well
- Time management - how you have managed time

CONSTRUCTION

The construction of a driveway gate is a six-step process.

Project 2 - Driveway Gates

As with security gates, you may need to consider that some designs allow pets to pass in and out. Remember, if there are existing gateposts, the widths you require must be determined with care, allowing for hinges and a slight gap between the gates to prevent scraping or jamming.

What you need:

- Square tubing, 25 mm/ 19 mm/ 12 mm, quantity depending on design
- Hinges
- Latch or bolt
- Padlock hasp
- Welding kit with correct consumables and safety equipment

Getting it together:

Step I

- Draw the gate frame full size onto your metal work surface.
- Place the tubing on the drawing and mark it for length and angle of cut.
- Replace the cut lengths onto the drawing and check that the joints fit closely without gaps.
- Hold the joints together with magnets and tack weld each joint.
- Check for square and complete the welds, working at an angel of 45º.
- Dress and clean each weld.

Step 2

- If the gate panel consists simply of vertical bars, cut the appropriate lengths from the 12 mm square tubing with square cuts.
- Place the frame back on the drawing and, one by one place the bars in position with the aid of magnets and tack weld them.
- Tack weld all vertical bars in position, check for square and complete all welds.
- Dress and clean each weld.

Step 3

- If the panel is of criss-cross metal work, it should be drawn to full size.
- The drawing should then be used as a guide for cutting the tubing, paying attention to the angles of cut
- Where the tubing crosses it may be both cut and butt-welded overlapped and welded as lap joints.

Step 4

- Measure and mark the position of hinges and other fittings an tack weld them in place.
- Check against the gatepost before completing the welds.

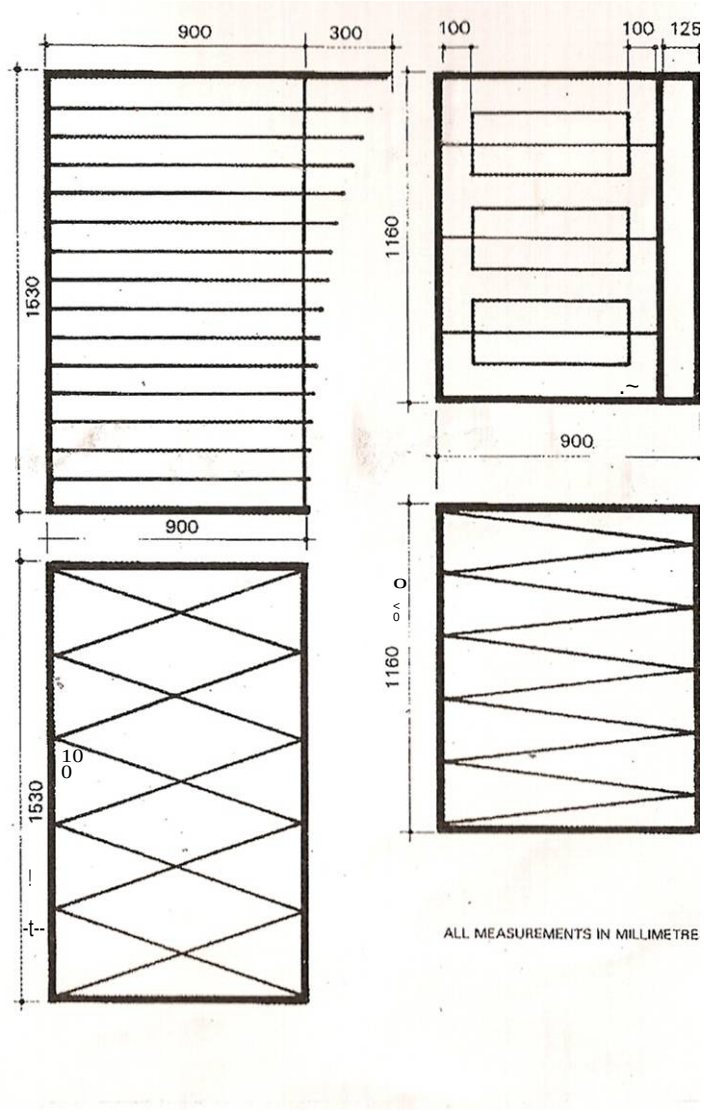
Step5

- If any uprights have free ends, these can be beaten flat, cover with plug, or fitted with a decorative end cap (available at steel merchants).

Step 6

- Coat the gate with primer and, when dry finish with two coats of paint

Design Examples (all measurements in mm)



DECLARATION OF ASSESSMENT TASK

Name of Candidate: _____ School: _____

Grade: _____ Date: _____

Name of Teacher: _____

I hereby declare that the project submitted for assessment is my own, original work and has not been previously submitted for moderation.

SCHOOL STAMP

_____ _____

SIGNATURE OF CANDIDATE **DATE**

As far as I know, the above declaration by the candidate is true and I accept that the work offered is his or her own.

_____ _____

SIGNATURE OF TEACHER **DATE**

DESIGN PORTFOLIO	MANUFACTURING PROCESS	QUALITY OF PRODUCT	TOTAL	NAME OF ASSESSOR
/50	/25	/25	/100	

EXAMPLE OF AN ASSESSMENT RUBRIC FOR PRACTICAL TASKS AND THE PRACTICAL

A. RUBRIC FOR ASSESSMENT OF THE DESIGN PORTFOLIO

PLANNING OF THE GATE

CRITERIA	1	2	3	4	5	Possible mark	Mark obtained
Planning Skills: Analysis (diagnosis)	Shows no attempt to identify and collect information to analyse the given problem or need.	Shows an attempt to identify and collect relevant information to analyse the given problem or need.	Identifies the given problem correctly and collects relevant information to analyse the problem or need.	Analyses the given problem correctly and shows evidence of the use of a range of information to understand the problem or need.	Identifies the given problem correctly and uses a variety of investigated strategies to obtain relevant information that assisted in developing and design of innovative ideas.	**5**	
Solution specifications	Attempts to come up with limited design sketches, some specifications and constraints relating to the given problem.	Attempts to come up with design sketches, specifications and constraints relating to the given problem.	Provides design sketches and a variety of specifications and constraints relating to the given problem.	Provides excellent design sketches and a list of relevant specifications and constraints to the given problem.	Provides excellent innovative design sketches that are extremely well formulated	**5**	
Sketching	Provides irrelevant sketches that demonstrate limited drawing skills.	Provides some relevant sketches with incorrect lines and/or wrong symbols.	Provides relevant sketches with correct lines and symbols.	Provides sketches with correct lines and symbols and related to the given problem.	Provides excellent sketches according to the given problem considering possible solutions.	**5**	

General Safety	Attempts to consider safety regulations.	Shows some awareness of safety regulations.	Shows awareness, knowledge and application of safety regulations.	Shows awareness, knowledge and application of safety regulations regarding a variety of conditions.	Shows awareness, knowledge and application of safety regulations regarding all conditions and considers preventative measures.	**5**	
Cost calculations and material list	Tries to do cost calculations.	Attempts to do cost calculations by using incorrect units or data.	Provides cost calculations using correct units and data collected without consideration of constraints.	Provides cost calculations using correct units and data collected and considers constraints.	Provides cost calculations using correct units and data collected and considers relevant constraints.	**5**	
Portfolio presentation	The portfolio is incomplete and poorly ordered and prepared	The portfolio is complete but poorly ordered and prepared.	The portfolio is complete and adequately ordered and prepared.	The portfolio is completed and well presented.	The complete portfolio presentation shows a high level of innovation and creativity.	**5**	

Total mark: **30 ÷ 6 x 5 = 25**

B. RUBRIC FOR ASSESSMENT OF THE CONSTRUCTION PROCESS.

CRITERIA	1	2	3	4	5	Possible mark	Mark obtained
Safe handling of tools and equipment (face moderation)	Demonstrates awareness of safety measures.	Demonstrates awareness and knowledge of some safety measures.	Demonstrates adequate knowledge and awareness of all applicable safety measures.	Demonstrates sufficient knowledge and awareness of applicable safety measures.	Demonstrates awareness and knowledge of some safety measures.	**5**	
Skills relating to handling of tools and equipment (face moderation)	Demonstrates limited knowledge and skills related to tools and equipment used.	Demonstrates some knowledge and skills related to tools and equipment used and house-keeping.	Demonstrates adequate knowledge and skills related to tools and equipment used and evidence of housekeeping.	Demonstrates adequate knowledge and skills related to tools and equipment used and good housekeeping.	Demonstrates some knowledge and skills related to tools and equipment used and house-keeping.	**5**	
Knowledge of materials.	Shows limited background knowledge on materials used.	Shows some knowledge of materials and their properties.	Shows adequate knowledge of materials and their properties and concepts.	Shows adequate knowledge of materials and their properties, concepts and principles.	Shows some knowledge of materials and their properties.	**5**	

Process techniques	Demonstrates little knowledge of techniques used.	Demonstrates limited knowledge of techniques used.	Demonstrates adequate knowledge of correctly selected techniques.	Demonstrates adequate knowledge on how to select and apply the relevant techniques correctly.	Demonstrates limited knowledge of techniques used.	**5**	
Skills used in processes (face moderation)	Demonstrates limited knowledge of skills needed.	Demonstrates limited knowledge of skills needed.	Demonstrate adequate knowledge of skills needed.	Demonstrates adequate knowledge of skills needed and some considers some constraints.	Demonstrates some knowledge of skills needed and considering relevant constraints.	**5**	

25 x 2 = 50

C. RUBRIC FOR ASSESSMENT OF THE QUALITY OF THE FINISHED PRODUCT

CRITERIA	1	2	3	4	5	Possible mark	Mark obtained
Address the Problem/ need	The product is incomplete. The completed product lacks detail and makes interpretation difficult.	The product is complete but do not address the problem of need at all.	The product is complete and addresses the problem or need only partly?	The product fulfils the purpose for which it was designed and shows no real evidence of innovation in the solution to the identified problem or need.	The product fulfils the purpose for which it was designed and shows innovation that is appropriate to the identified problem or need.	**5**	
Dimensions and measurements of the final product.	Dimensions differ completely from original design. Shows no effort in making correct measurements.	Dimensions differ from original design but shows some effort in making correct measurements.	Some dimensions differ from original drawing design. More accuracy and effort is shown in making correct measurements.	Dimensions differ slightly from original design. Shows much more accuracy and effort in making correct measurements.	Measurements and dimensions correlate completely with original design.	**5**	

Appearance: Finishing off. Filing, grinding, sanding and painting.	No finishing off. No filing, painting or sanding. Shows little effort in making the appearance acceptable.	Product's appearance not acceptable due to some of the finishing methods that was not followed.	Product's appearance acceptable due to some of the finishing methods that were used.	Product's appearance more acceptable due to finishing off that was done but no painting.	Product's appearance is very acceptable and shows a high level of innovation and creativity.	**5**	
Functionality of the final product.	The product is incomplete and does not function at all.	The product is complete but it is not functional at all and shows no new improvements.	The product is complete, and functions but shows no new improvements and little innovation.	The product is complete, functions well and shows some new improvements and innovation.	The product is complete, functions very well and shows many new improvements and a very high level of innovation.	**5**	
Time management	Very little evidence of time management.	Demonstrates some sense of time management but planning not realistic.	Evidence of realistic time management on planning but does not keep to the plan.	Manages time well according to the initial plan.	Manages time exceptionally well by considering alternatives according to the initial plan.	**5**	

5 x 5 = 25

GRAND TOTAL 100