



# **basic education**

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Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **AGRICULTURAL TECHNOLOGY**

### **GUIDELINES FOR PRACTICAL ASSESSMENT TASKS**

**2016**

**These guidelines consist of 28 pages.**

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## 1. INTRODUCTION

The 16 Curriculum and Assessment Policy Statement subjects which contain a practical component all include a practical assessment task (PAT). These subjects are:

- **AGRICULTURE:** Agricultural Management Practices, Agricultural Technology
- **ARTS:** Dance Studies, Design, Dramatic Arts, Music, Visual Arts
- **SCIENCES:** Computer Applications Technology, Information Technology
- **SERVICES:** Consumer Studies, Hospitality Studies, Tourism
- **TECHNOLOGY:** Civil Technology, Electrical Technology, Mechanical Technology and Engineering Graphics and Design

A practical assessment task (PAT) is a compulsory component of the final promotion mark for all candidates offering subjects that have a practical component and counts 25% (100 marks) of the end-of-year examination mark. The PAT is implemented across the first three terms of the school year. This is broken down into different phases or a series of smaller activities that make up the PAT. The PAT allows for learners to be assessed on a regular basis during the school year and it also allows for the assessment of skills that cannot be assessed in a written format, e.g. tests or examinations. It is therefore important that schools ensure that all learners complete the practical assessment tasks within the stipulated period to ensure that learners are resulted at the end of the school year. The planning and execution of the PAT differs from subject to subject.

## 2. TEACHER GUIDELINES

### 2.1 Practical Assessment Task (PAT) for 2016

The aim of the PAT is to teach learners to solve technological problems in the agricultural environment by using critical, innovative and thinking skills.

The PAT comprises a design component, manufacturing component and a final product. The PAT leads the learner to design and develop the product according to technological processes.

Schools will be informed of the Grade 12 project at the beginning of term 4 of the Grade 11 year to allow the teacher and learner to do planning in advance.

A scenario and complete layout of the example model that may be used as the PAT for 2016 are given on the next page (p. 4).

**SCENARIO:****Back to the Basics...**

On the job injuries due to lifting, account for a lot of accidents in any industry.



Personal safety is very important in any workshop or situations on the farm when heavy objects have to be moved around. To avoid serious injuries workers should use equipment when heavy objects have to be moved around.



Design a piece of equipment that you can use effectively to move heavy objects or objects that are difficult to handle.

The piece of equipment must be versatile so that it can be used in different circumstances or conditions. It must be light, simple and easy to handle, but sturdy enough to carry heavy loads. It must be foldable/collapsible and should not take up much storage space.

Use various technological processes to help you with the design and manufacture of this piece of equipment, e.g. planning, investigation, research and different practical skills.

## 2.2 How to administer the PAT

This PAT document must be used by the teacher as a guideline to do the PAT. The learner must design and plan the entire PAT individually with the teacher's guidance. The teacher will provide the learners with the problem statement only. The idea is that all the learners should have different PAT designs. The teacher must evaluate the learner's design for practicality and make suggestions before the learner submits the final design portfolio.

If the school/learners decide to do an alternative PAT, that PAT must comply with the prescribed standards set out in this PAT guideline document. This will include evidence of the design portfolio, work procedures, rubrics and evidence of the final project. The criteria and format to assess the design portfolio, manufacturing process and final product must be the same as that of the prescribed PAT.

The project must consist of at least SEVEN of the criteria given on pages 46 and 47 of the Agricultural Technology Curriculum and Assessment Policy Statement (CAPS).

The model should have functional value and should be suitable for use in real-life farm and workshop situations. The learners should be familiar with the assessment criteria before they start with the task. The PAT must be done under the supervision of the designated teacher.

The practical assessment task in Grade 12 is set externally, assessed internally and moderated externally. The project is completed under controlled conditions and is assessed by means of a rubric.

The promotion mark of Agricultural Technology consists of a PAT component of 100 marks (25%), a school-based assessment (SBA) component of 100 marks (25%) and a final examination component of 200 marks (50%).

The PAT contributes 25% of the total promotion mark (400) in Grade 12. The practical assessment task counts 100 marks and consists of a design portfolio (25 marks), a manufacturing process (50 marks) and the final product (25 marks).

Before a learner can commence with the manufacturing process, the design portfolio must be completed and assessed by the teacher. This done so that the teacher can identify design flaws for the learner to correct.

The design portfolio and final project must be available for monitoring and moderation. The PAT must be evaluated, checked and authenticated by the teacher before being presented as the learner's final evidence of performance.

The teacher's PAT file must contain evidence of:

- (a) The PAT task
- (b) A complete record of assessment that must always be available for monitoring and moderation purposes.

The design portfolio and the project must be available at the school for monitoring and moderation during the entire school year.

External moderation will be done by the respective provincial moderators and the national Department of Basic Education. No learner is allowed to take his/her project home before external moderation has been completed.

Failure by the teacher to maintain a record of the assessment of the PAT is misconduct and will be dealt with in terms of paragraph 5(3) of the policy document, *National Policy on the Conduct, Administration and Management of the National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF)*, or other appropriate measures.

The absence of marks for the practical assessment task in Grade 10–12, without a valid reason, will result in the candidate registered for that particular subject receiving an incomplete result. The candidate will be given three weeks before the commencement of the final end-of-year examination to submit the outstanding practical assessment task. Should the candidate fail to present the practical assessment task he/she will be informed that he/she did not meet the minimum requirements for promotion and that he/she must repeat the subject the following year.

## 2.3 Phases in the development of the PAT project

The project should be completed over the following three phases:

### 2.3.1 Phase 1: Design Portfolio

Learners must identify the problem or need in their chosen project. He/she must also investigate the project, generate ideas and arrive at possible design solutions to make or produce the model, to evaluate it and to give a solution for the problem/need. The evidence for this phase will be placed in the design portfolio which can be started at the beginning of term 4 of the Grade 11 year and continues to the end of January of the Grade 12 year. In this phase the learner must be encouraged to be creative and to show initiative.

A Declaration of Authenticity (ANNEXURE D) must be completed by each learner before final moderation.

The design portfolio should include evidence of how the development of the product was approached, as indicated below:

- Analysis and planning of the assignment
- Relationship between technology and society and environment
- Sketches, diagrams or calculations
- Materials used
- Tools used
- General safety rules that are applicable
- Comparisons of processes and tools to be used
- Cost calculations and material list
- Knowledge and skills needed in the manufacturing process
- Manufacturing processes that were followed
- Planning of time from the start to the final product
- Research or investigations undertaken
- Any other information that is relevant to the project

**Format of the design portfolio:**

Cover page:	Learner name: Grade: School: Examination number: Year:
Table of Contents:	Assignment Planning and research Design sketches Material list Tools needed and relevant safety measures Comparisons of processes and tools to be used Cost calculations Source list Steps to follow Any additional information

**2.3.2 Phase 2: Manufacturing process**

Learners start constructing the actual model at the beginning of February, in term 1, or as soon as a learner has finished the design portfolio and it has been approved by the teacher. The learner then commences with Phase 2. The model must be completed by the middle of term 3 in Grade 12.

The learner is expected to manufacture the model in the school's workshop, under close supervision of the teacher. Processes not performed by the learner cannot be assessed as part of the learner's work.

The model must include a number of practical skills, but remember that the model must adhere to the minimum number of skills, as prescribed by the subject CAPS document.

Continuous assessment must be done by the teacher during the manufacturing process to evaluate and assess certain skills and processes with the aid of the rubric attached (ANNEXURE B).

**2.3.3 Phase 3: Final product**

Learners submit the models for assessment by the end of term 3. The planning done in phase 1 (design portfolio) should also be submitted for assessment of the final product. For final assessment the model must be completed and fully functional.

## 2.4 **Criteria and guidelines for PAT assessment**

The PAT consists of three phases. The teacher must assess each phase with the aid of the rubrics attached.

- The DESIGN PORTFOLIO must be completed and marked not later than the end of term 1. As soon as a learner is finished with the design portfolio and it has been assessed and approved by the teacher, he/she may commence with phase 2. The teacher must use the rubric on ANNEXURE A to assess the design portfolio.
- The MANUFACTURING PROCESS is a continuous process and the various skills must be assessed continuously by the teacher when the different skills are applied. The rubric on ANNEXURE B must be used.
- The FINAL PRODUCT must be evaluated and assessed using the rubric on ANNEXURE C.
- ANNEXURE D is the Declaration of Authenticity and must be completed by each learner and the teacher.
- ANNEXURE E must be used by the teacher to ensure that the Agricultural Technology workshop and facility is up to standard for external moderation.
- ANNEXURES F and G are examples of mark sheets that may be used.

### 2.4.1 **Criteria and guidelines to assess the DESIGN PORTFOLIO (25 marks)**

- Analysis of problem
- Interrelationship between technology, society and the environment
- Ability to generate ideas
- Providing a solution
- Sketching (dimensions, welding symbols, scale and projection symbols)
- Materials, tools and equipment
- General safety rules
- Cost calculations and material list
- Evidence of comparisons between different processes and skills
- Portfolio presentation

### 2.4.2 **Criteria and guidelines to assess the MANUFACTURING PROCESS (face moderation) (50 marks)**

- Safe handling and maintenance of tools and equipment
- Skills related to proper use and maintenance of tools and equipment
- Knowledge of materials to solve problems
- Application of different techniques and processes
- Skills demonstrated in the application of processes

### 2.4.3 **Criteria and guidelines to assess the QUALITY of the FINAL PRODUCT (25 marks)**

- The product fulfils the purpose for which it was designed and shows innovation that is appropriate to the problem
- Dimensions and measurements of the final product
- Appearance: Finishing includes filing, grinding, sanding and painting
- Ensure that the product functions properly
- Time management: Check for completeness of the product

## 2.5 **MODERATION OF THE PAT**

- **Internal moderation (Head of Department)**  
The teacher's and learner's PAT portfolios must be moderated by the head of department or senior teacher of the subject at the school.
- **External moderation (Subject specialist/advisor)**  
The subject specialist/advisor must do external moderation once a term. At the end of term 1 the subject specialist/advisor must moderate the design portfolio. In the course of term 2 the actual manufacturing process by the learner must be moderated. The final product as well as the final PAT mark must be moderated in term 3.
- **External moderation (National panel)**  
A panel of moderators appointed by the national Department of Basic Education will moderate the PAT and practical workshop. ANNEXURE E is the moderation tool that will be used by the national panel for moderation at schools.

### 3. LEARNER GUIDELINES

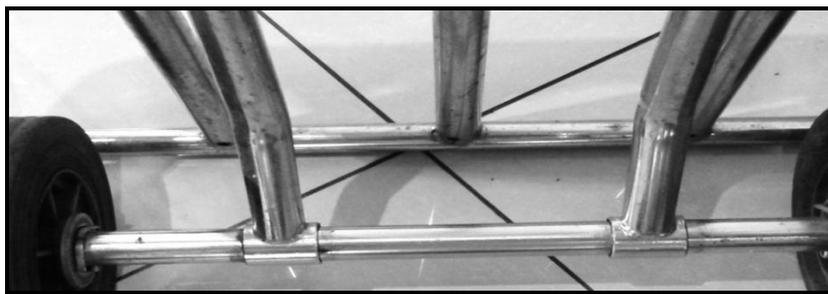
#### 3.1 Introduction

The model to be constructed by the learners must include the processes taught in the theoretical work from Grade 10. These processes are part of various tasks that can be undertaken on a farm. The learners use the skills and knowledge acquired in Agricultural Technology to engage with this project.

Note that the design portfolio for Grade 12 should be started in term 4 of the Grade 11 year and should be completed by week 3 of term 1 of the Grade 12 year. The construction process should be completed by the end of term 2. Assessment and moderation will be done on a continuous basis.

#### 3.2 Illustrations of the PAT

The two photographs below show a trolley used to move heavy objects.



### 3.3 Cutting list and cost calculation

The materials below should be purchased and cut according to the sizes given. The prices of the parts were determined according to prices at the time this project was planned.

- For the main frame Ø25 mm pipe is used with a wall thickness of 2 mm.
- Ø25 mm with 2 mm wall thickness, R20,83 p/m.
- Flat iron 50 mm x 5 mm, R33,17 p/m.

Component	Part	Type of material	Measurements	Quantity	Cost
Main framework	A1	Ø25 mm	2 230 mm	1	R46,45
Main framework horizontal support	A2	Ø25 mm	620 mm	1	R12,91
Main framework vertical bars	A3	Ø25 mm	865 mm	3	R54,05
Main framework bottom horizontal support	A4	Ø25 mm	500 mm	1	R10,42
Base framework	B1	Ø25 mm	1 670 mm	1	R34,79
Base sleeve	B2	Ø32 mm	45 mm	4	R3,75
Base frame supports	B3	Ø25 mm	535 mm	2	R22,29
Wheel connection support	C1	Flat iron	130 mm x 50 mm x 5 mm	2	R8,62
Wheel support	C2	Ø25 mm	530 mm	2	R22,08
Wheel shaft	C3	Ø25 mm	530 mm	1	R11,04
Split pin	C4	2,5 mm	40 mm	4	R2,00
Washer	C5	Ø50 mm	Hole 25 mm	4	R14,52
Caster wheels	C6		Ø200 mm	2	R120,00
			<b>Price of material (excluding wheels)</b>		<b>R242,92</b>
			<b>Total price</b>		<b>R362,92</b>

3.4 **Lists of consumable materials, machines and tools that are needed to manufacture the project**

<b>Tools that are needed:</b>	
<ul style="list-style-type: none"> <li>• Cut-off machine/Angle grinder</li> <li>• Pedestal drill</li> <li>• Oxy-acetylene set</li> <li>• MIG welder</li> <li>• Inverter welder/Arc welder</li> <li>• Plasma cutter</li> <li>• Assorted spanners and pliers</li> <li>• Mitre square</li> <li>• Hacksaw</li> </ul>	<ul style="list-style-type: none"> <li>• Scriber</li> <li>• Centre punch</li> <li>• Paint brush</li> <li>• Hammer</li> <li>• Broom</li> <li>• Flat and round files</li> <li>• Pipe bender</li> <li>• Personal protection clothing</li> </ul>
<b>Consumable materials:</b>	
<ul style="list-style-type: none"> <li>• Steel drill bit Ø5 mm</li> <li>• Grinding/Cutting discs/Plasma cutter accessories (nozzle; inserts; spacers)</li> <li>• Arc-welding rods</li> <li>• MIG wire and gas</li> <li>• Hacksaw blades</li> </ul>	<ul style="list-style-type: none"> <li>• Oxy-acetylene gas and welding rods</li> <li>• Turpentine</li> <li>• Hand cleaner</li> <li>• Undercoat paint</li> <li>• Paint for final covering</li> </ul>

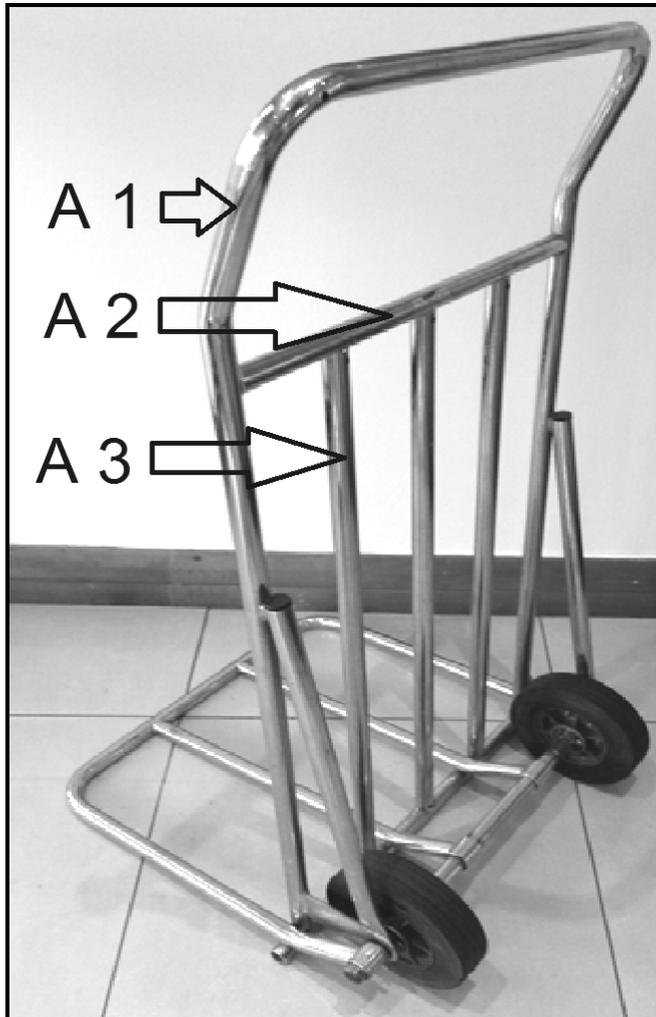
3.5 **Procedure to be followed in the manufacturing process**

<b>PROPOSED WORK/TIME SCHEDULE</b>	<b>PREDICTED DATE</b>
<p>Approximately 2 hours per week are needed for the PAT, as prescribed in the CAPS document. Approximately 18 weeks (36 hours) are available for the manufacturing process.</p>	
<p><b>A. DESIGN PORTFOLIO (25 marks)</b></p> <ol style="list-style-type: none"> <li>1. PAT problem statement/task must be handed to the learners. Teacher must explain the problem statement/task. Learners have <b>THREE</b> weeks to complete the design portfolio.</li> <li>2. Teacher must be actively involved and provide support to the learners during the design process.</li> <li>3. Teacher must collect, evaluate, assess and give feedback to the learners about the finished portfolios before the learners can commence with the manufacturing process.</li> </ol>	<p style="text-align: center;">Week 1</p> <p style="text-align: center;">Week 2</p> <p style="text-align: center;">Week 3</p>

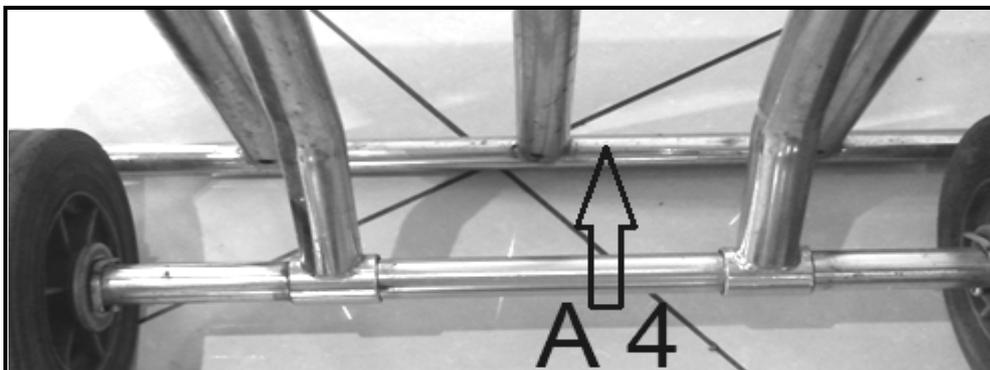
**B. MANUFACTURING PROCESS (50 marks)**  
(The teacher must monitor and evaluate the entire manufacturing process.)

Weeks 4–7

**Main framework PART A**



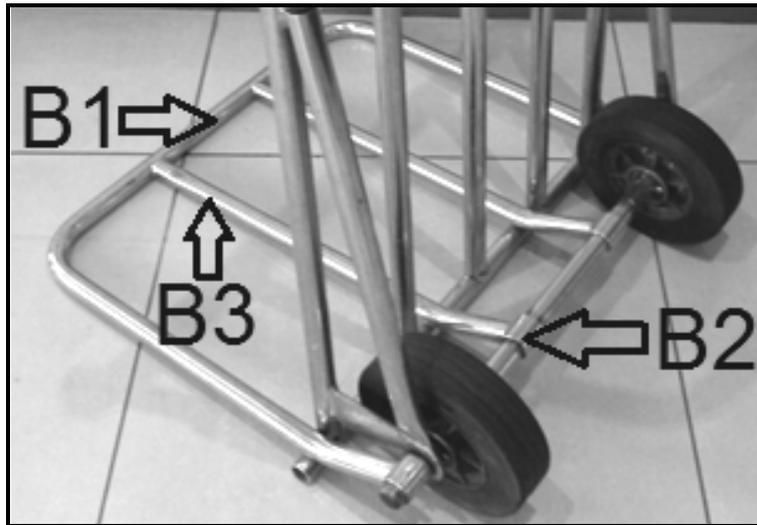
1. Measure, mark and cut a pipe of 2 230 mm, PART A1.
2. Bend the pipe 30° and 90°, as shown in the photograph above, to form the handle part and the main body of the trolley.
3. Measure, mark and cut a pipe of 865 mm, PART A2.
4. Measure, mark and cut 3 pipes of 620 mm, PART A3.



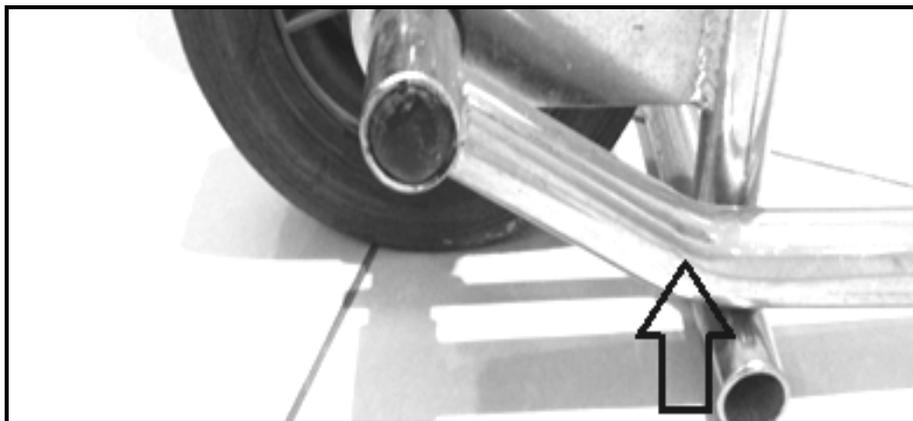
5. Measure, mark and cut a pipe of 500 mm, PART A4.
6. Weld the parts to the main frame, as indicated in the photographs.

**Base framework PART B**

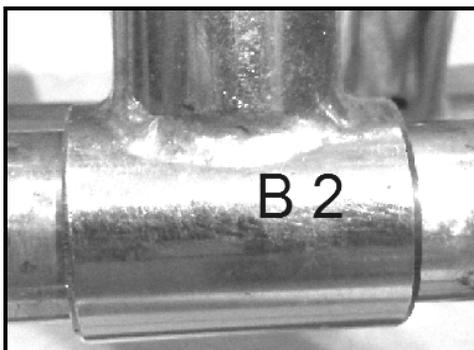
Weeks 8–10

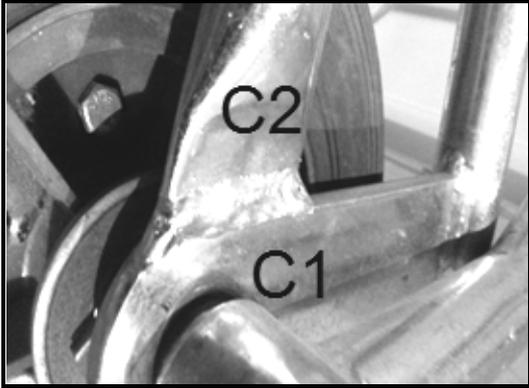
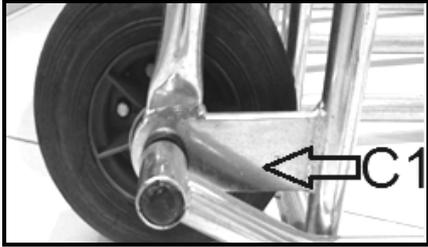


1. Measure, mark and cut a pipe of 1 670 mm, PART B1.
2. Bend PART B1 90° twice, as shown in the photograph above, to form the base part of the trolley.
3. Bend the two pipe ends 30°, 110 mm from the ends, as shown in the photograph below.



4. Measure, mark and cut 4 pipes of 45 mm, PART B2.
5. Measure, mark and cut 2 pipes of 535 mm, PART B3.
6. Bend the pipe ends 30°, as shown in the photograph above, to form the base part of the trolley.
7. Weld PARTS B2 to the parts of the base frame, as indicated in the photographs below.



<b>Wheel-connecting supports PART C</b>		Weeks 13–19
		
<ol style="list-style-type: none"> <li>1. Measure, mark and cut 2 flat irons of 130 mm x 50 mm. Drill a <math>\text{Ø}25</math> mm hole through the flat iron, PART C1. Measure, mark and cut 2 pipes of 535 mm, PART B3.</li> <li>2. Measure, mark and cut 2 x <math>\text{Ø}25</math> mm pipes 530 mm long. Flatten one end, as shown in the photograph above, PART C2.</li> <li>3. Weld PARTS C1 and C2 onto each other and onto PART A1 to form the wheel support structure, as indicated in the photograph above.</li> </ol>		

<b>Shaft for wheel assembly PART D</b>		Week 28
<ol style="list-style-type: none"> <li>1. Drill two <math>\text{Ø}5</math> mm holes for each wheel in the pipe, PART C3, for the split pins, as indicated in the photographs below. (Use a pedestal drill with a <math>\text{Ø}5</math> mm drill bit.)</li> </ol>		
		
<ol style="list-style-type: none"> <li>2. Close the ends of the shaft by welding them or by using plastic caps. You may use oxyacetylene welding.</li> </ol>		
		

<b>Assembly</b>	Week 29
<ol style="list-style-type: none"><li>1. Assemble the wheels and base framework, PART B, on the wheel shaft, as indicated in the photograph.</li><li>2. Insert washers to serve as spacers, as indicated in the photograph.</li><li>3. Insert the split pins into the holes and bend the ends of the pins to hold the wheel assembly in place.</li></ol>	
<b>Testing</b>	Week 30
<ol style="list-style-type: none"><li>1. Test for functionality, durability and strength.</li><li>2. Make adjustments if necessary.</li><li>3. Test again for proper functioning.</li></ol>	
<b>Finishing</b>	Week 31
<ol style="list-style-type: none"><li>1. Remove sharp edges with a file or angle grinder.</li><li>2. Sand all surfaces with sanding paper.</li></ol>	
<b>Painting</b>	Week 32
<ol style="list-style-type: none"><li>1. Paint/Spray with a rust-resistant primer.</li><li>2. Paint/Spray with oil-base paint.</li><li>3. Polish the painted area with wax and a buff.</li></ol>	
<b>C FINAL PRODUCT (25 marks)</b>	Week 33
<ol style="list-style-type: none"><li>1. Teacher must evaluate the final product and finalise the PAT marks for the year.</li></ol>	

3.6 **Alternative designs**

<p style="text-align: center;"><b>TROLLEY</b></p> 	<p style="text-align: center;"><b>TROLLEY</b></p> 
<p style="text-align: center;"><b>TRAILER DOLLY</b></p> 	<p style="text-align: center;"><b>HAND TRUCK</b></p> 
<p style="text-align: center;"><b>TROLLEY</b></p> 	<p style="text-align: center;"><b>VERSATILE HAND TRUCK WITH STEP WHEELS</b></p> 

#### 4. CONCLUSION

On completion of the practical assessment task learners should be able to demonstrate their understanding of the industry, enhance their knowledge, skills, values and reasoning abilities as well as establish connections to life outside the classroom and address real-world challenges. The PAT furthermore develops learners' life skills and provides opportunities for learners to engage in their own learning.

**5. ASSESSMENT RUBRICS**

Name of candidate: \_\_\_\_\_ School: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

DESIGN PORTFOLIO	MANUFACTURING PROCESS	QUALITY OF PRODUCT	TOTAL	SIGNATURE OF TEACHER	SIGNATURE OF EXTERNAL MODERATOR
/25	/50	/25	/100		

5.1 ASSESSMENT RUBRIC FOR THE DESIGN PORTFOLIO							ANNEXURE A	
CRITERIA	0	1	2	3	4	5	POSSIBLE MARK	MARK OBTAINED
Planning skills: Analysis and diagnosis	No attempt made and no evidence to be assessed is found.	Shows a limited 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 wide range of information to understand the problem or need.	Identifies the given problem/need correctly and uses a variety of investigated strategies to obtain relevant information that assisted in developing and design of innovative ideas.	5	
Interrelationship between technology, society and environment	No attempt made and no evidence to be assessed is found.	Makes no attempt to consider the interrelationship.	Awareness of the interrelationship was demonstrated.	Awareness and knowledge of interrelationship was demonstrated.	Application and knowledge of interrelationship aspects.	Application and knowledge of interrelationship aspects and the implementing of preventative measures.	5	
Generate ideas	No attempt made and no evidence to be assessed is found.	Mentions some ideas.	Shows some awareness of alternative ideas	Offers some alternative ideas with a limited reasoning of choices.	Uses original and creative ideas and chooses the most suitable option.	Generates an excellent variety of alternative and innovative ideas. The preferred option is well justified with clear links to the design.	5	
Solutions	No attempt made and no evidence to be assessed is found.	Attempts to come up with limited design sketches and some specifications. 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 is extremely well formulated and defines the need according to the given problem.	5	

<b>CRITERIA</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>POSSIBLE MARK</b>	<b>MARK OBTAINED</b>
Sketching	No attempt made and no evidence to be assessed found.	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.	<b>5</b>	
Material, tools and equipment list	No attempt made and no evidence to be assessed found.	Attempts to list some material, tools and equipment.	Provides a list of material, tools and equipment incorrect or insufficient.	Provides a list of relevant material, tools and equipment.	Provides a list with a variety of relevant material, tools and equipment needed.	Provides a list of the most relevant material, tools and equipment needed in a creative format.	<b>5</b>	
General safety	No attempt made and no evidence to be assessed found.	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.	<b>5</b>	
Cost calculations and material list	No attempt made and no evidence to be assessed found.	Provides a material list with no calculations.	Attempts to do cost calculations by using incorrect units, data and material list.	Provides cost calculations using correct units and data collected without considering 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.	<b>5</b>	
Comparisons	No attempt made and no evidence to be assessed found.	No comparisons.	Poor comparison of one process.	Comparison of different processes, skills and materials.	A thorough comparison of different processes, skills and materials.	A thorough comparison of different processes, skills and materials and comes to a conclusion.	<b>5</b>	
Portfolio presentation	No attempt made and no evidence to be assessed found.	The portfolio is incomplete and poorly ordered and prepared.	The portfolio is completed but poorly ordered and prepared.	The portfolio is completed and adequately ordered and prepared.	The portfolio is completed and well presented.	The completed portfolio presentation shows a high level of innovation and creativity.	<b>5</b>	
<b>TOTAL MARK</b>							<b>50÷2=25</b>	

<b>5.2 ASSESSMENT RUBRIC FOR THE MANUFACTURING PROCESSES</b>							<b>ANNEXURE B</b>	
<b>CRITERIA</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>POSSIBLE MARK</b>	<b>MARK OBTAINED</b>
Safe handling of tools/ equipment (face moderation)	No attempt made and no evidence to be assessed found.	Demonstrates awareness of safety measures.	Demonstrates awareness and knowledge of some safety measures.	Demonstrates adequate knowledge and awareness of applicable safety measures.	Demonstrates sufficient knowledge and awareness of all applicable safety measures.	Demonstrates sufficient knowledge and awareness of all applicable safety measures and applies preventative measures.	<b>5</b>	
Skills relating to handling of tools and equipment (face moderation)	No attempt made and no evidence to be assessed found.	Demonstrates limited knowledge and skills and equipment related to tools used.	Demonstrates some knowledge and skills related to tools and equipment used and housekeeping.	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.	Demonstrate sufficient knowledge and skills related to maintenance and use of tools and equipment and excellent housekeeping.	<b>5</b>	
Knowledge of materials	No attempt made and no evidence to be assessed found.	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 sufficient knowledge of materials and their properties, concepts and principles to solve problems.	<b>5</b>	
Process techniques	No attempt made and no evidence to be assessed found.	Demonstrate some knowledge of inappropriate 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.	Demonstrate sufficient knowledge of correctly selected and applied techniques considering possible constraints.	<b>5</b>	
Skills used in processes (face moderation)	No attempt made and no evidence to be assessed found.	Demonstrates limited knowledge of skills needed.	Demonstrate some knowledge of skills needed.	Demonstrate adequate knowledge of skills needed.	Demonstrate adequate knowledge of skills needed and considering some constraints.	Demonstrate sufficient knowledge of skills needed and considering relevant constraints.	<b>5</b>	
<b>TOTAL MARK</b>							<b>25x2=50</b>	

<b>5.3 ASSESSMENT RUBRIC FOR THE QUALITY OF THE FINISHED PRODUCT</b>							<b>ANNEXURE C</b>	
<b>CRITERIA</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>POSSIBLE MARK</b>	<b>MARK OBTAINED</b>
Address the problem/need	No attempt made and no evidence to be assessed found.	The product is incomplete. The completed product lacks details and makes interpretation difficult.	The product is complete, but does not address the problem or need at all.	The product is complete and addresses the problem or need partly.	The product fulfils the purpose for which it was designed but 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.	<b>5</b>	
Dimensions and measurements of the final product	No attempt made and no evidence to be assessed found.	Dimensions differ completely from original design. Shows no effort in making correct measurements.	Dimensions differ from original design, but show some effort in making correct measurements.	Some dimensions differ from original drawing design. More accuracy and effort are shown to make 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.	<b>5</b>	
Appearance: Finishing off, filing, grinding, sanding and painting	No attempt made and no evidence to be assessed found.	No finishing off. No filing, painting or sanding. Shows little effort to make the appearance acceptable.	Product's appearance not acceptable due to some of the finishing methods not being 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.	<b>5</b>	
Functionality of the final product. Does the product function properly?	No attempt made and no evidence to be assessed found.	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 same new improvements and innovation.	The product is complete, functions very well and shows many new improvements and a very high level of innovation.	<b>5</b>	
Time management	No attempt made and no evidence to be assessed found.	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.	<b>5</b>	
<b>TOTAL MARK</b>							<b>25</b>	

5.4 **DECLARATION OF AUTHENTICITY**

**ANNEXURE D**

**DECLARATION OF AUTHENTICITY**

The **DESIGN PORTFOLIO** has been presented in one of the following ways: Sourcebook, Workbook or File. It is part of the Subject Portfolio. The **DESIGN PORTFOLIO** must be completed prior to the manufacturing proses.

The following has been included in the **DESIGN PORTFOLIO**:

- Analysis of problem
- Interrelationship between technology, society and the environment
- Ability to generate ideas
- Providing a solution
- Sketching (dimensions, welding symbols, scales and projection symbols)
- Materials, tools and equipment
- General safety rules
- Cost calculations and material list
- Evidence of comparisons between different processes and skills
- Portfolio presentation

100% of this PAT was done under the supervision of the designated teacher and without the help of anybody else. This is to certify that all work submitted is the original and own work of the learner. Processes not performed by the learner have not been assessed as part of the learner's work.

<b>Learner</b>		
<b>School</b>		
<b>District</b>		
	<b>Signature</b>	<b>Date</b>
<b>Learner</b>		
<b>Teacher</b>		
<b>Principal</b>		



## 5.5 EXTERNAL/INTERNAL MODERATION TOOL FOR PAT ANNEXURE E

## AGRICULTURAL TECHNOLOGY

SCHOOL: \_\_\_\_\_ EMIS No.: \_\_\_\_\_  
 TEACHER: \_\_\_\_\_ GRADE: \_\_\_\_\_  
 SUBJECT SPECIALIST: \_\_\_\_\_ DATE: \_\_\_\_\_  
 NUMBER OF LEARNERS IN GRADE: \_\_\_\_\_  
 NUMBER OF LEARNERS TAKING THE SUBJECT IN GRADES 10–12: \_\_\_\_\_

1	CONDITION OF THE WORKSHOP	Good <input checked="" type="checkbox"/>	Acceptable <input checked="" type="checkbox"/>	Poor <input checked="" type="checkbox"/>	Comments
	Windows				
	Ceiling				
	Floor				
	Oil-resistant floor paint				
	Walls				
	Lights				
	Enough electric wall sockets				
	Electric wall sockets in working condition				
	Ventilation				
	Burglar proofing				
2	<b>TEACHER</b>				YES <input checked="" type="checkbox"/> NO <input checked="" type="checkbox"/>
	<b>Preparation file:</b>				
	☞ PAT guideline document				
	☞ Mark sheet				
	☞ Learner rubrics				
	☞ Reference material (additional information and resources given to learners by the teacher)				
	<b>Safety:</b>				
	☞ Safety screens/devices				
	☞ Safety of acetylene/gas cylinders				
	☞ Welding areas well screened off				
	☞ Is the area around dangerous machines demarcated with yellow lines on the floor?				
	☞ Fire extinguisher				
	☞ First-aid kit				
	☞ Safety posters				
	☞ Safety signs				
	☞ Applicable OHS Act implemented in workshop				
	☞ Is the number of learners in workshop per session not more than 15 as stipulated by the OHS Act?				
	<b>Tools and equipment:</b>				
	☞ Fully equipped workshop				
	☞ Basic tools and equipment				
	☞ Damaged and broken equipment				
	☞ Are there shadow boards against the walls or mobile units?				

	<b>Workshop atmosphere:</b>	
	☞ Posters	
	☞ Exhibits	
	☞ Safe layout	
	☞ Is the workshop purpose build?	
	<b>Cleanliness of storeroom:</b>	
	☞ Storeroom is well organised	
	☞ Storeroom is clean	
	<b>Cleanliness of workshop:</b>	
	☞ Workshop is clean	
<b>3</b>	<b>LEARNERS' PAT PROJECT FILES</b>	<b>YES <input checked="" type="checkbox"/></b> <b>NO <input checked="" type="checkbox"/></b>
	Did the learners follow the prescribed PAT?	
	If not, is the PAT project of the same standard or higher than the prescribed PAT?	
	Do all learners have PAT portfolio files?	
	Do all learners have a completed learner summary record sheet?	
	Did all learners complete the declaration of authenticity? (p. 23)	
	Do all learners have copies of the design project pages (p. 10–17) in their PAT files?	
	Did the learners sufficiently complete the following phases of the PAT:	
	☞ Design	
	☞ Manufacturing	
	Does evidence exist that all tasks have been assessed by the teacher?	
	Have all the rubrics been completed and totals carried over to the mark sheet correctly?	
	Does the assessment conducted by the teacher appear to be fair and reliable?	
	Are the mark allocation and level of achievement in line with the rest of the province?	
	Will an adjustment of that average be needed?	
<b>4</b>	<b>OVERALL QUALITY OF THE PROJECT</b>	<b>YES <input checked="" type="checkbox"/></b> <b>NO <input checked="" type="checkbox"/></b>
	Have all learners completed the project?	
	Have all learners' work been internally moderated?	
	Does the final project match the designs in the portfolio?	
	Do the marks allocated by the teacher in the rubrics match the available evidence in the learner's file?	
<b>5</b>	<b>INTERNAL/EXTERNAL MODERATION:</b>	<b>YES <input checked="" type="checkbox"/></b> <b>NO <input checked="" type="checkbox"/></b>
	Is there evidence of internal moderation by the head of department?	
	Is there evidence of internal moderation by the subject specialist?	
<b>6</b>	<b>INTERNAL/EXTERNAL MONITORING:</b>	<b>YES <input checked="" type="checkbox"/></b> <b>NO <input checked="" type="checkbox"/></b>
	Is there evidence of external monitoring by the head of department?	
	Is there evidence of external monitoring by the deputy principal?	
	Is there evidence of external monitoring by the subject specialist?	



5.6 MARK SCHEDULE

ANNEXURE F

AGRICULTURAL TECHNOLOGY – PAT

SCHOOL: \_\_\_\_\_ CENTRE NO.: \_\_\_\_\_ EMIS NUMBER: \_\_\_\_\_

CIRCUIT: \_\_\_\_\_ DISTRICT: \_\_\_\_\_ YEAR: \_\_\_\_\_

No.	Learner	DESIGN PORTFOLIO										MANUFACTURING PROCESSES						QUALITY OF THE FINISHED PRODUCT						
		Planning Skills: Analysis and diagnosis	Interrelationship between technology, society & environment	Generate ideas	Solution	Drawings/Sketching	Material, tools & equipment	General Safety	Cost calculations and material list	Comparisons	Portfolio presentation	TOTAL 25 (50 ÷ 2=25)	Safe handling of tools/equipment (face moderation)	Skills relating to handling of tools and equipment (face moderation)	Knowledge of materials	Process techniques	Skills used in processes (face moderation)	TOTAL 50 (25 ÷ 2=50)	Address the problem /need	Dimensions and Measurements	Appearance and Finishing off	Functionality of final product.	Time management	TOTAL 25
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	50	5	5	5	5	5	25	
1.																								
2.																								
		Total:										Total:						Total:						
		Average:										Average:						Average:						

TEACHER: \_\_\_\_\_

SIGNATURE OF TEACHER: \_\_\_\_\_

DATE: \_\_\_\_\_

PRINCIPAL: \_\_\_\_\_

SIGNATURE OF PRINCIPAL: \_\_\_\_\_

DATE: \_\_\_\_\_

MODERATOR: \_\_\_\_\_

SIGNATURE OF MODERATOR: \_\_\_\_\_

DATE: \_\_\_\_\_

5.7 CONSOLIDATION FORM

ANNEXURE G

AGRICULTURAL TECHNOLOGY

SCHOOL: \_\_\_\_\_ CENTRE NUMBER: \_\_\_\_\_ EMIS NUMBER: \_\_\_\_\_

CIRCUIT : \_\_\_\_\_ DISTRICT: \_\_\_\_\_ YEAR: \_\_\_\_\_

	CANDIDATES	CANDIDATE EXAM NUMBER	Design portfolio	Manufacturing of product.	Quality of the final product	TOTAL	Moderated mark
			25	50	25	100	100
1.							
2.							
		<b>Total:</b>					
		<b>Average</b>					

TEACHER: \_\_\_\_\_ SIGNATURE OF TEACHER: \_\_\_\_\_ DATE: \_\_\_\_\_

PRINCIPAL: \_\_\_\_\_ SIGNATURE OF PRINCIPAL: \_\_\_\_\_ DATE: \_\_\_\_\_

MODERATOR: \_\_\_\_\_ SIGNATURE OF MODERATOR: \_\_\_\_\_ DATE: \_\_\_\_\_