basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

# AGRICULTURAL TECHNOLOGY

## GUIDELINES FOR PRACTICAL ASSESSMENT TASKS

## 2015

**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) mark 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. test or examination. 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 2015

The aim of the PAT is to teach learners to solve technological problems in the agricultural environment by making use of 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 the fourth term of Grade 11 of the previous academic year to allow the teacher and learner to do planning in advance.

The following is a scenario and complete layout of the example model that can be used as PAT for 2015.

**Scenario:**
As an Agricultural Technology learner you need a wire tensioner to erect a new fence. You decide to design and manufacture your own wire tensioner because it is too expensive to buy a new one. Use various technological processes to help you with the design and manufacturing of this tool, e.g. planning, investigation, research and various practical skills.

## 2.2 How to administer the PAT

If the school/learner decides to manufacture an alternative PAT, the standard of the PAT must be compared with that in the prescribed PAT document. This will include evidence of the design portfolio, work procedure, rubrics and the evidence of the final project. The criteria and format for assessing 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 given criteria as stated on pages 46 and 47 in the Agricultural Technology: Curriculum and Assessment Policy Statement (CAPS).

The model should have functional value and must be usable in real-life farm 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 externally set, internally assessed and externally moderated. 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 (25%) 100 marks, an SBA component (25%) 100 marks and a final examination component of (50%) 200 marks.

The PAT contributes 25% to the total promotion mark (400) in Grade 12. The PAT is 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. The reason for this is that the teacher must identify design flaws.

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 (This must always be available for monitoring and moderation purposes.)

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 Grades 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, evaluate and communicate a solution to the problem or need. The evidence of this phase will be located in the design portfolio which will start in term 4 of Grade 11 and continue to the end of January, Grade 12.
In this phase the learner must be encouraged to be creative and to show initiative.

A Declaration of Authenticity (ANNEXURE D) must be completed for 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, 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 where 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:<br>Grade:<br>School:<br>Exam number:<br>Year: |
| Table of Contents: | Assignment<br>Planning and research<br>Design sketches<br>Material list<br>Tools needed and relevant safety measures<br>Comparisons of processes and tools to be used<br>Cost calculations<br>Source list<br>Steps to follow<br>Any additional information |

2.3.2 **Phase 2: Manufacturing Process**

Learners start constructing the actual model at the beginning of February, term 1, or as soon as a learner has finished the design portfolio and it has been approved by the teacher. From here the learner commences with Phase 2. The model must be completed by the end of term 2 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 it must be remembered that the model must adhere to the minimum number of skills as prescribed by the subject CAPS document.

Continuous assessment must be undertaken by the teacher during the manufacturing process to evaluate and assess certain skills and processes with the aid of the given rubric.

2.3.3 **Phase 3: Final product**

Learners submit the model for assessment by the end of the second term. The planning done in Phase 1 (design portfolio) must 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. Each phase must be assessed by the teacher with the aid of the given rubric.

- The **design portfolio** must be completed and marked not later than the end of the first term. As soon as a learner is finished with the design portfolio and it has been assessed and approved by the teacher, he/she can commence with phase 2. The teacher must use the rubric (ANNEXURE A) to assess the design portfolio.
- The **manufacturing process** is a continuous process and the various skills and processes must be assessed continuously by the teacher when the different skills are applied. The given rubric (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 for each learner.
- 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 can be used.

### 2.4.1 Criteria and guidelines for assessing 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 for assessing 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 for assessing 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 portfolio must be moderated by the head of department or senior teacher of the subject in the school.
- **External moderation (Subject specialist)**
  The subject specialist must do external moderation once a term. At the end of term 1 he/she must moderate the design portfolio. During 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 will be used for this purpose.

# 3. LEARNER GUIDELINES

## 3.1 Introduction

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

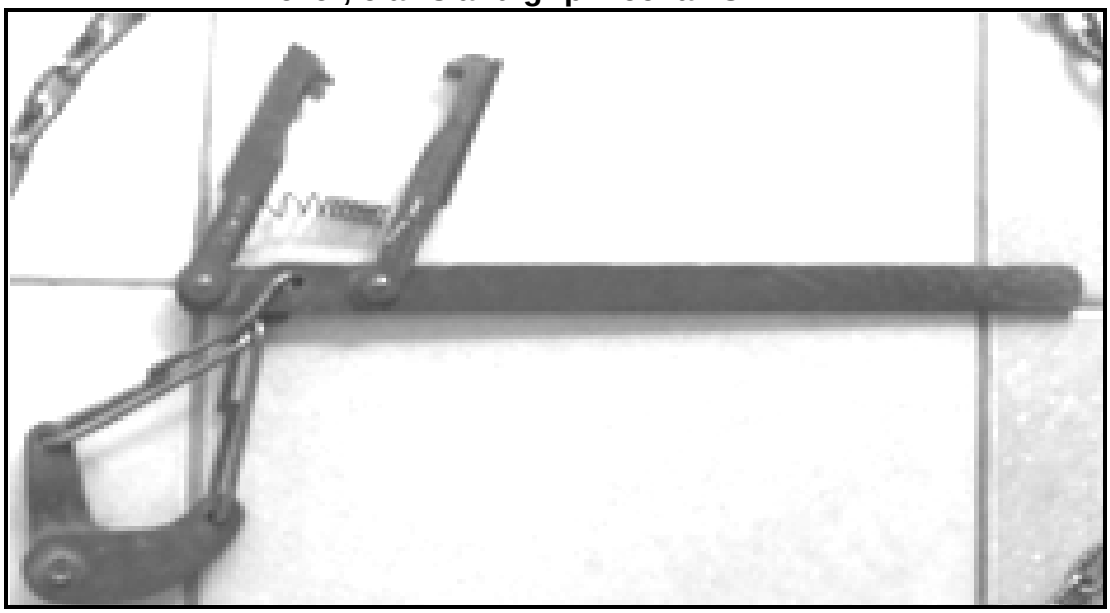
Note that the design portfolio for Grade 12 must start in term 4 of Grade 11 and must be finished by the second week of the first term in Grade 12. The construction process must be finished at the end of the second term. Assessment and moderation will be done on a continuous basis.

## 3.2 Instructions on how to do the PAT

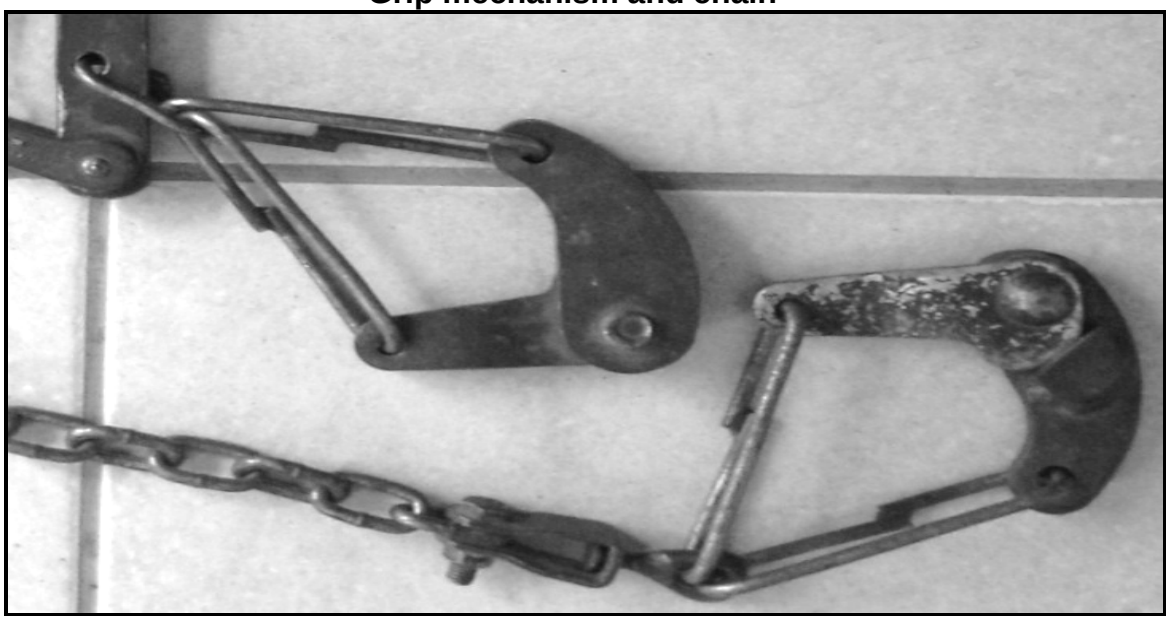
The photo on the next page shows a wire tensioner as referred to in the beginning of this document.

**Wire tensioner**

**Lever, claws and grip mechanism**



**Grip mechanism and chain**



## 3.3 Illustrative drawing of the PAT model

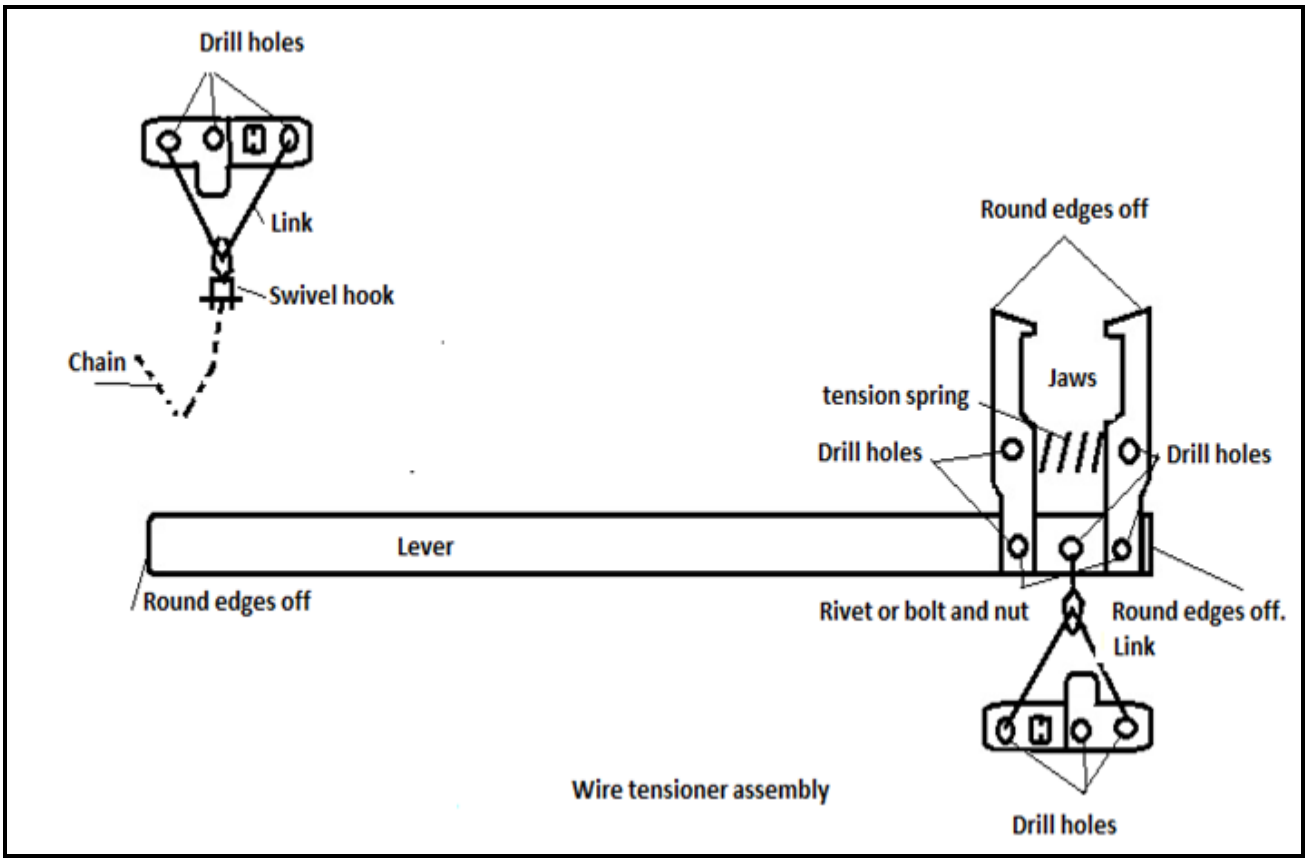



**FIGURE 1**

## 3.4 Cutting list and cost calculation

The following material must be purchased and cut according to the given sizes. The prices of the parts were determined by prices at the time this project was planned.

| Component | Type of material | Measurements | Quantity | Cost |
|---|---|---|---|---|
| Lever | Flat bar | 25 mm x 8 mm x 410 mm | 1 | R12,00 |
| Grip mechanism | Flat bars | 50 mm x 5 mm x 140 mm | 2 | R18,00 |
| Links | Round bar | Ø6 mm x 170 mm | 4 | R8,00 |
| Swivel hook | Round bar | Ø6 mm x 100 mm | 1 | R2,00 |
| Grip base plate | Flat bars | 50 mm x 8 mm x 95 mm | 2 | R10,00 |
| Grip base stop | Flat bar | 50 mm x 8 mm x 20 mm | 1 | R1,00 |
| Grip cantilever | Flat bar | 50 mm x 5 mm x 90 mm | 1 | R2,00 |
| Swivel hook chain link | Flat bar | 20 mm x 3 mm x 100 mm | 1 | R1,00 |
| Chain | Chain | 6 mm x 1 300 mm | 1 | R30,00 |
| Connection | Rivets | Ø8 mm x 20mm | 2 | R4,00 |
| Connecting chain to chain link | Bolt and nut | M 8 mm x 30 mm | 1 | R1,00 |
| Connecting lever and claw | Bolts and nuts | M 6 mm x 30 mm | 2 | R2,00 |
| Claw connecting spring | Spring | 50 mm x Ø5 mm | 1 | R5,00 |
| Serves as claw spring connecters | Split pins | Ø4 mm x 30 mm | 2 | R3,00 |
| Connecting claw links to lever | Round bar | Ø6 mm x 150 mm | 1 | R1,00 |
| | | | **Total price** | **R100,00** |

## 3.5 Lists of consumable materials, machines and tools that are needed to manufacture the project:

| **Tools that are needed:** | | |
|---|---|---|
| • Cut-off machine/Portable angle grinder<br>• Drilling machine<br>• Oxy-acetylene set<br>• MIG welder<br>• Inverter welder/Arc welder<br>• Plasma cutter<br>• Assorted spanners and pliers | | • Mitre Square<br>• Hacksaw<br>• Scriber<br>• Centre punch<br>• Paint brush<br>• Hammer<br>• Broom |

| **Consumable materials:** | | |
|---|---|---|
| • Steel drill bit Ø4 mm<br>• Steel drill bit Ø6 mm<br>• Steel drill bit Ø8 mm<br>• Steel drill bit Ø10 mm<br>• Grinding/cutting discs/ plasma cutter accessories (nozzle; inserts; spacers)<br>• Arc-welding rods<br>• MIG wire and gas<br>• Hacksaw blades<br>• Oxy-acetylene gas and welding rods | | • Flat bar 10 mm x 150 mm<br>• Round bar Ø12 mm x 150 mm<br>• Bolt and nut M 8 mm x 150 mm<br>• Turpentine<br>• Hand cleaner<br>• Undercoat paint<br>• Paint for final covering |

## 3.6 Procedure to be followed in the manufacturing process

Use of comparative measurements or make use of your own discretion where a measurement is missing or unclear. Drawings are for explanation purposes only and are not to scale.

- Measure, mark and cut the lever to a length of 310 mm from the 25 x 8 mm flat bar with a hacksaw, cut-off machine or angle grinder. (FIGURE 2)

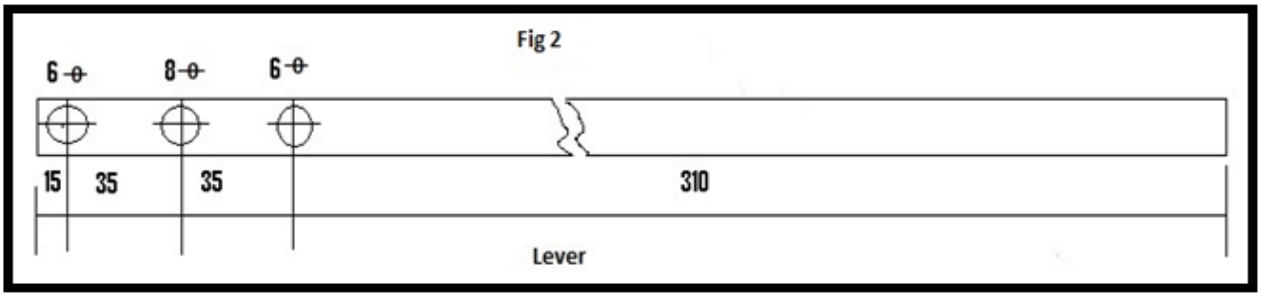



**FIGURE 2**

- Measure where the holes are to be drilled according to the drawing above. Mark with a scriber and punch a mark with the centre punch and hammer for the drill-bit to start.
- Drill the holes using a drilling machine according to the sizes on the drawing.
- Measure, mark and cut two claws 140 mm long from the 50 mm x 4 mm flat bar with a cut-off machine or angle grinder.
- Cut the two claws to the following shapes using the full length and width of the plate, using a plasma cutter, angle grinder, file or hacksaw or oxy-acetylene cutting device. (FIGURE 3)
- Drill the holes according to the measurements, using a drilling machine.
- Bend the plates into a U-shape around a 10 mm flat bar by using oxy-acetylene gas to heat the plate.

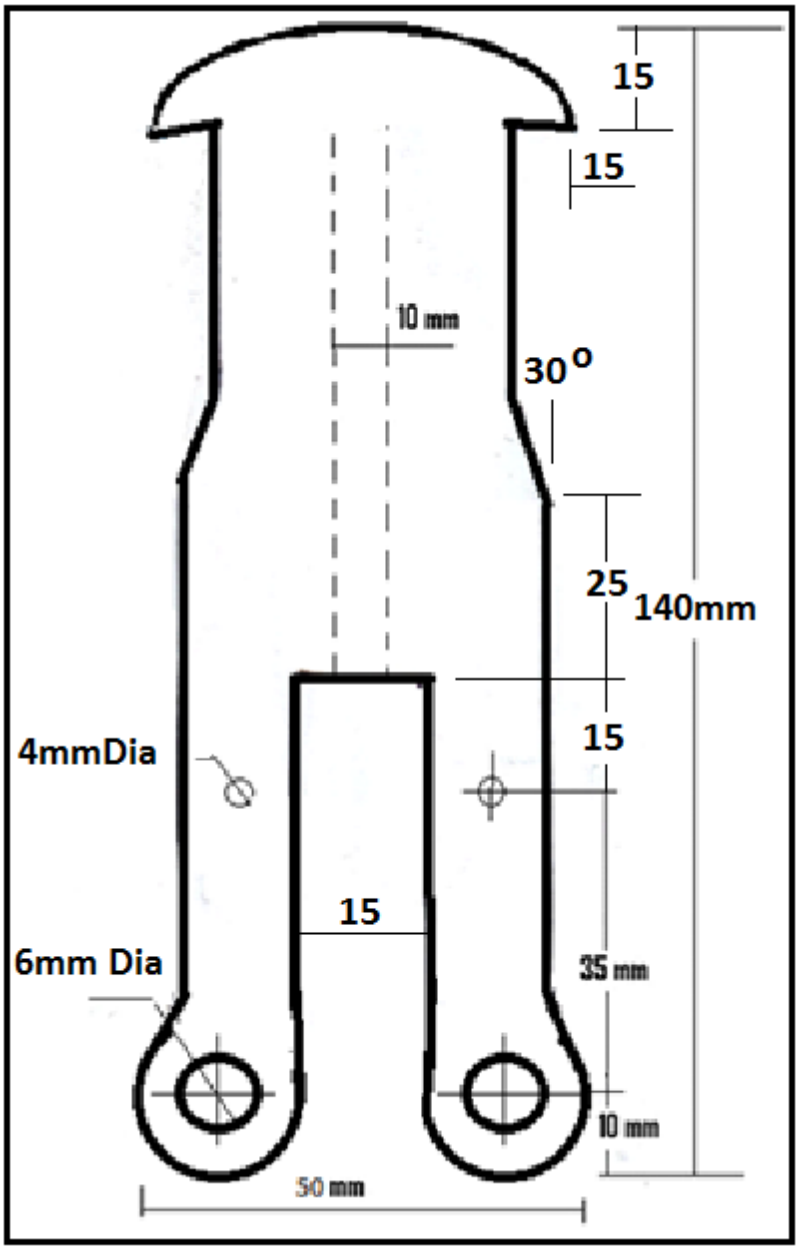



**FIGURE 3: CLAWS**

- Use a Ø6 mm rod to make chain links with an inside length of 95 mm and an inside width of 12 mm. Do not use heat for the bending and ensure that the two ends overlap with 10 mm. Arc weld these ends together during the assembly of the wire tensioner.
- Manufacture the two grip mechanisms by referring to the following drawings. Drawing A refers to the 8 mm base plate while drawing B refers to the 5 mm cantilever. The cutting can be done using plasma cutting, oxyacetylene, angle grinding, hacksaw cutting or filing.( FIGURE 4)

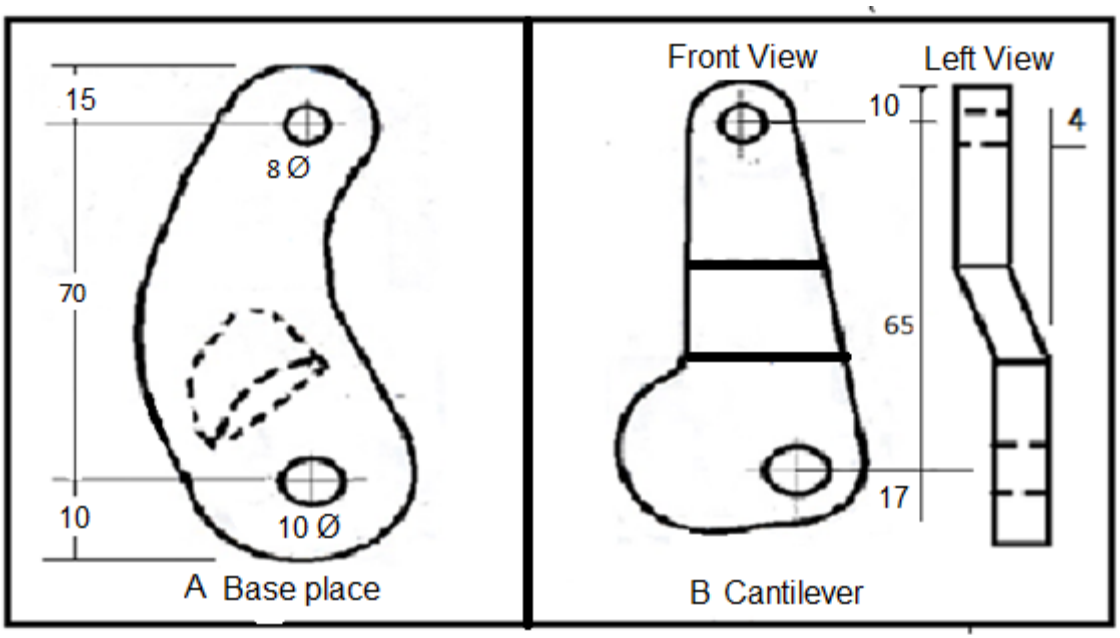



**FIGURE 4: GRIP MECHANISM**

- Drill the Ø10 mm hole in the 8 mm base plate.
- Assemble component A (baseplate) and B (cantilever). Ensure that B is placed on top of A as shown in FIGURE 5.

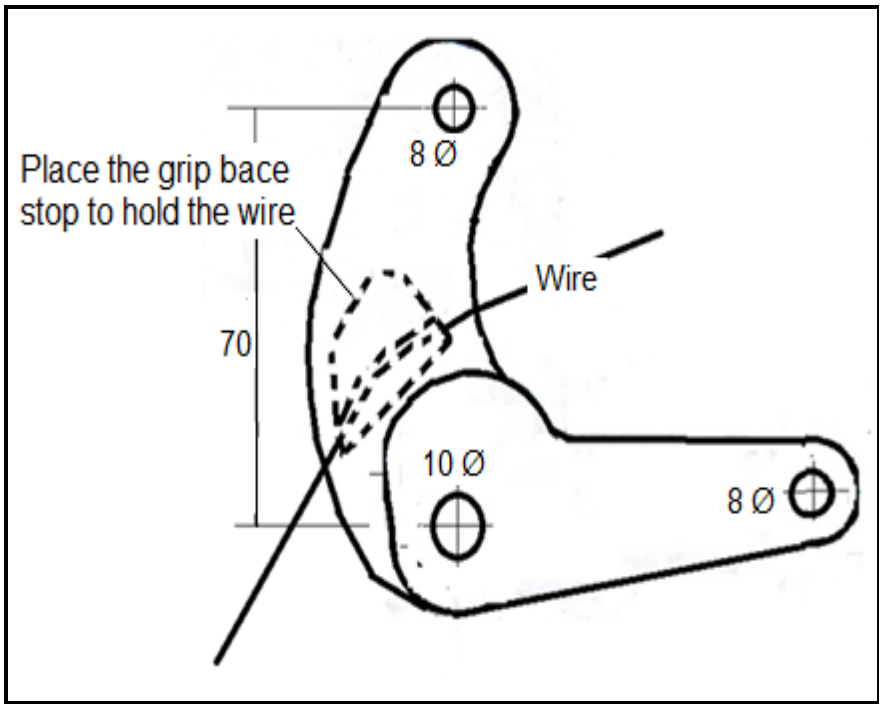



**FIGURE 5: GRIP MECHANISM**

- Shape the base plate stop of the grip mechanism as shown in the drawing below. Use the 50 mm x 8 mm x 20 mm flat bar for the lock and ensure that it is machined on the inside to prevent the wire from slipping during use. Position the lock onto the 8 mm cantilever base plate and ensure that the jaw mechanism works before using the welding machine to weld the locks. (FIGURE 6)

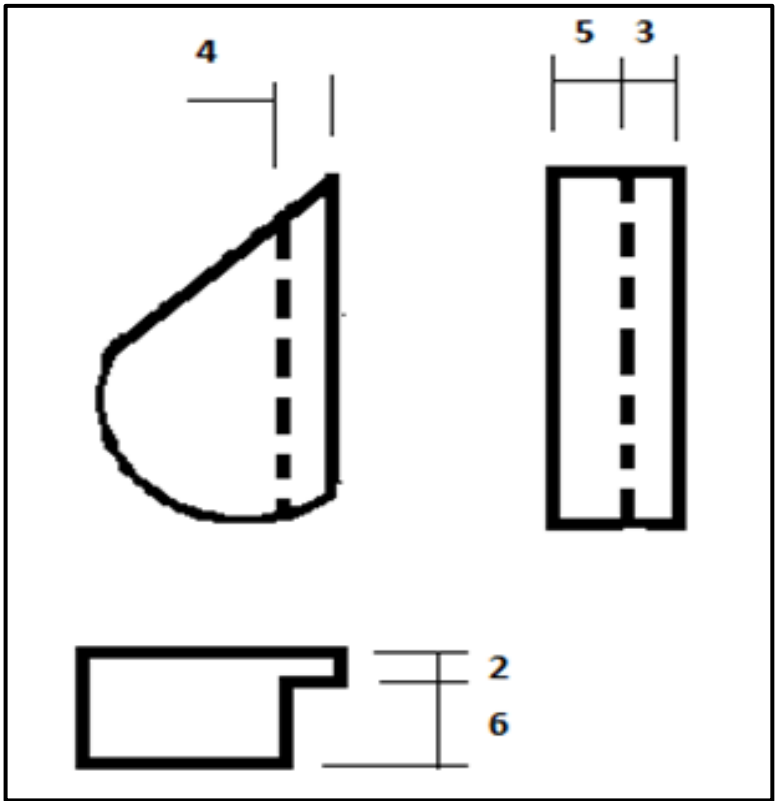



**FIGURE 6: BASE PLATE STOP**

- Cut a piece of chain of 1 300 mm in length.
- Manufacture a swivel hook mechanism that can swivel and connect the jaw mechanism to the chain. This mechanism consists of two parts. Part A is the swivel hook that is attached to the swivel-hook chain link (Part B). Use the 100 mm piece of Ø6 mm round bar and the 20 mm x 3 mm x 100 mm flat bar. (FIGURE 7)
- Assemble the chain with the links, claws and jaws.
- Connect the handle for the lever by bolting the claws to the lever. Fit the Ø4 mm split pins and clip the tension spring into position.
- Make the chain link with the Ø6 mm x 150 mm round bar and remember to leave an overlap of 10 mm. Attach the chain link to the lever and to the remaining chain links which you have manufactured and weld this chain link.

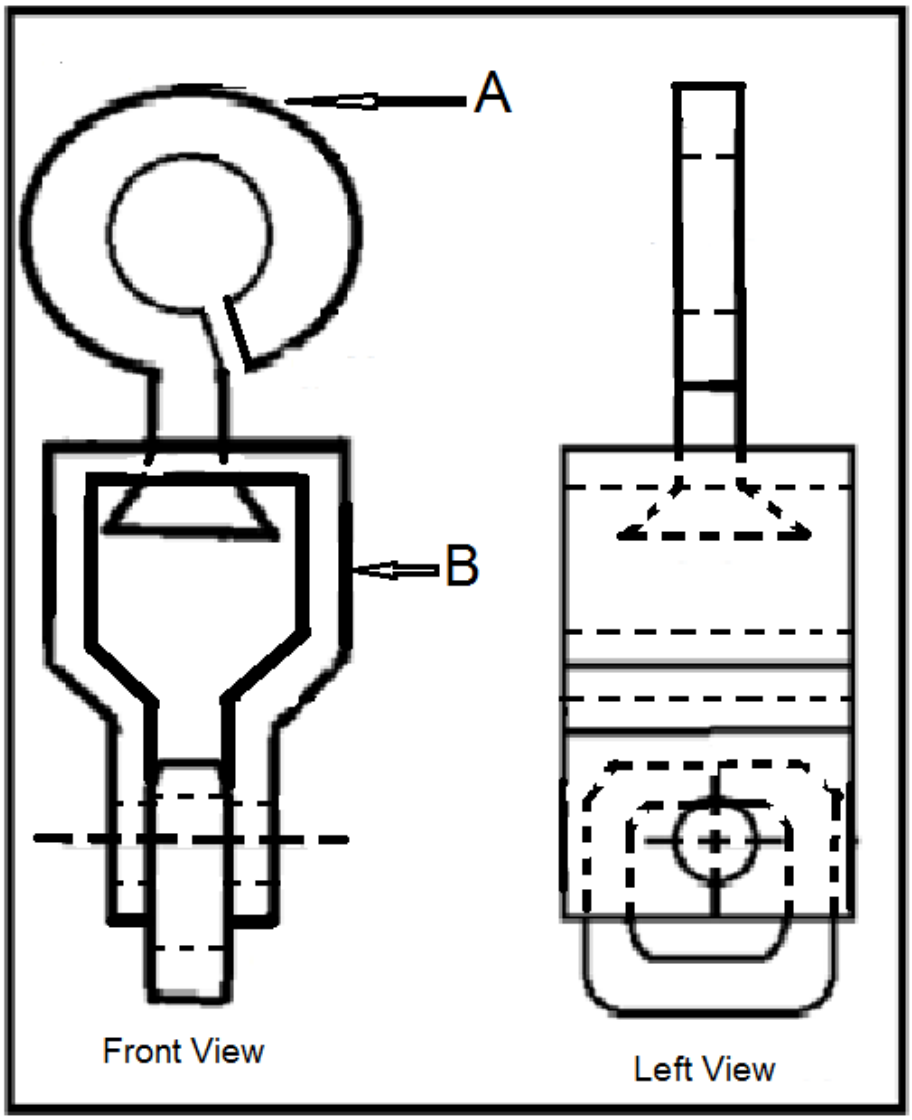



**FIGURE 7: SWIVEL-HOOK CHAIN LINK**

- Attach the two remaining chain links to the remaining jaw assembly and weld the overlaps together.
- Use an angle grinder to remove any sharp edges on your wire tensioner.
- Test for functionality and make adjustments.
- If the tool works correctly, it can be disassembled and painted.
- Paint the project parts with an undercoat.
- Do the final painting of the parts.
- Assemble the parts again.

Approximately 2 hours per week is needed for the PAT as prescribed in the CAPS document. Approximately 18 weeks are available for the manufacturing process.

## 3.7 Proposed time schedule

| | Task | Predicted date |
|---|---|---|
| **1** | **Lever** | |
| | Measure, mark and cut the lever. | **Week 3** |
| | Drill holes and finish off. | |
| **2** | **Claws** | **Week 4 and 5** |
| | Measure, mark and cut the two claws. | |
| | Drill holes. | |
| | Bend as prescribed into a U-shape and finish off. | |
| **3** | **Links** | **Week 6** |
| | Make the links. | |
| **4** | **Cantilevers and base plates** | **Week 7 and 8** |
| | Cut the two cantilevers and base plates. | |
| | Shape the two cantilevers and base plates. | |
| | Bend the plates. | |
| | Drill the holes. | |
| **5** | **Jaws** | **Week 9** |
| | Manufacture the two jaw mechanisms. | |
| | Assemble components A (base plate) and B (cantilever). | |
| **6** | **Swivel hook mechanism** | **Week 10 and 11** |
| | Manufacture the swivel hook mechanism. | |
| **7** | **Link** | **Week 12** |
| | Make the chain links. | |
| **8** | **Assembly** | **Week 13** |
| | Cut a length of chain, 1 300 mm long. | |
| | Assemble the chain links, claws and jaws. | |
| | Assemble the handle for the lever by bolting the claws to the lever. | |
| | Attach the chain link to the lever and to the remaining links. | |
| | Attach the two chain links to the remaining links and the remaining jaw assembly and weld the overlaps together. | |
| **9** | **Testing the product** | **Week 14** |
| | Test for functionality and make adjustments. | |
| **10** | **Finishing** | **Week 15 and 16** |
| | If the tool works correctly, it can be stripped. | |
| | Remove any sharp edges on the wire tensioner. | |
| | Paint. | |

## 4. CONCLUSION

Upon 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** | |
| Solution | 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** | |

| CRITERIA | 0 | 1 | 2 | 3 | 4 | 5 | POSSIBLE MARK | MARK OBTAINED |
|---|---|---|---|---|---|---|---|---|
| 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. | **5** | |
| 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. | **5** | |
| 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. | **5** | |
| Cost calculations and material list | No attempt made and no evidence to be assessed found. | Provide 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. | **5** | |
| 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 come to a conclusion. | **5** | |
| 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. | **5** | |
| | | | | | | **TOTAL MARK** | **50÷2=25** | |

| 5.2 ASSESSMENT RUBRIC FOR THE MANUFACTURING PROCESSES | | | | | | | ANNEXURE B | |
|---|---|---|---|---|---|---|---|---|
| **CRITERIA** | **0** | **1** | **2** | **3** | **4** | **5** | **POSSIBLE MARK** | **MARK OBTAINED** |
| 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. | **5** | |
| 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. | **5** | |
| 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. | **5** | |
| 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. | **5** | |
| 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. | **5** | |
| | | | | | | **TOTAL MARK** | **25x2=50** | |

| 5.3 ASSESSMENT RUBRIC FOR THE QUALITY OF THE FINISHED PRODUCT | | | | | | | ANNEXURE C | |
|---|---|---|---|---|---|---|---|---|
| **CRITERIA** | **0** | **1** | **2** | **3** | **4** | **5** | **POSSIBLE MARK** | **MARK OBTAINED** |
| 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. | **5** | |
| 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 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 attempt made and no evidence to be assessed found. | 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 was 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. Does the product functions 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. | **5** | |
| 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. | **5** | |
| | | | | | | **TOTAL MARK** | **25** | |

5.4 **DECLARATION OF AUTHENTICITY** **ANNEXURE D**

## DECLARATION OF AUTHENTICITY

The **DESIGN PORTFOLIO** ***ha***s 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, scale and projection symbol)
- 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.

| | | |
|---|---|---|
| **Learner** | | |
| **School** | | |
| **District** | | |
| | **Signature** | **Date** |
| **Learner** | | |
| **Teacher** | | |
| **Principal** | | |

School Stamp

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 ☑** | **Acceptable ☑** | **Poor ☑** | **Comments** |
|---|---|---|---|---|---|
| | Windows | | | | |
| | Ceiling | | | | |
| | Floor | | | | |
| | Oil-resistant floor paint | | | | |
| | Walls | | | | |
| | Lights | | | | |
| | Enough electric wall sockets | | | | |
| | Electric wall sockets in working condition | | | | |
| | Ventilation | | | | |
| | Burglar proofing | | | | |

| 2 | **TEACHER** | **YES☑NO☒** |
|---|---|---|
| | **Preparation file:** | |
| | 👍 PAT guideline document | |
| | 👍 Mark sheet | |
| | 👍 Learner rubrics | |
| | 👍 Reference material (additional information and resources given to learners by the teacher) | |
| | **Safety:** | |
| | 👍 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? | |
| | **Tools and equipment:** | |
| | 👍 Fully equipped workshop | |
| | 👍 Basic tools and equipment | |
| | 👍 Damaged and broken equipment | |
| | 👍 Are there shadow boards against the walls or mobile units? | |

| | | |
|---|---|---|
| | **Workshop atmosphere:** | |
| | 👍 Posters | |
| | 👍 Exhibits | |
| | 👍 Safe layout | |
| | 👍 Is the workshop purpose build? | |
| | **Cleanliness of storeroom:** | |
| | 👍 Storeroom is well organised | |
| | 👍 Storeroom is clean | |
| | **Cleanliness of workshop:** | |
| | 👍 Workshop is clean | |
| **3** | **LEARNERS' PAT PROJECT FILES** | **YES☑ NO☒** |
| | 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. 9–17) 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? | |
| **4** | **OVERALL QUALITY OF THE PROJECT** | **YES☑ NO☒** |
| | 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 teachers in the rubrics match the available evidence in the learner's file? | |
| **5** | **INTERNAL/EXTERNAL MODERATION:** | **YES☑ NO☒** |
| | Is there evidence of internal moderation by the head of department? | |
| | Is there evidence of internal moderation by the subject specialist? | |
| **6** | **INTERNAL/EXTERNAL MONITORING:** | **YES☑ NO☒** |
| | 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? | |

| | |
|---|---|
| **7** | Additional information. Add typed lists of the following information |
| | Add list of equipment **needed** in the Agricultural Technology workshop. |
| | Add list of equipment **in excess** in the Agricultural Technology workshop. |
| | Add list of equipment that is broken beyond repair and that must be **written off** in the Agricultural Technology workshop. |

| **CONCLUSIVE OBSERVATIONS:** |
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|---|---|---|---|
| **Signature: Teacher** | **Date** | **Signature: HOD** | **Date** |
| **Signature: Subject Advisor** | **Date** | **Signature: Principal** | **Date** |

School Stamp

## 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** | | **TOTAL A+B+C=100** |
| | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | **25** | | 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. | | | | | | | |
| | | **Total:** | | | | | |
| | | **Average** | | | | | |

TEACHER: _____ SIGNATURE OF TEACHER: _____ DATE: _____

PRINCIPAL: _____ SIGNATURE OF PRINCIPAL: _____ DATE: _____

MODERATOR: _____ SIGNATURE OF MODERATOR: _____ DATE: _____