basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ENGINEERING GRAPHICS AND DESIGN

GUIDELINES FOR PRACTICAL ASSESSMENT TASKS

2014

These guidelines consist of 24 pages.

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INTRODUCTION

The seventeen CAPS 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
- HSS: Life Orientation
- SCIENCES: Computer Applications Technology, Information Technology
- SERVICES: Consumer Studies, Hospitality Studies, Tourism
- TECHNOLOGY: Civil Technology, Electrical Technology, Engineering Graphics and Design, Mechanical Technology

A PAT allows the teacher to directly and systematically observe applied competence. The PAT comprises the application of knowledge and values and the demonstration and performance of skills particular to that subject and counts 25% (i.e. 100 marks) of the total National Senior Certificate (NSC) mark out of 400.

The Grade 12 PAT is implemented across the first three terms of the school year and should be undertaken as one extended task, which is broken down into different phases or a series of smaller activities that make up the PAT. The planning and execution of the PAT differ from subject to subject.

SECTION A contains the guidelines to the teacher, describing the structure and the administration of the PAT, while SECTION B contains the tasks and the assessment tools for both the learner and the teacher.

SECTION A (Teacher Guidelines)

1. The structure of the Practical Assessment Task (PAT) for EGD

As the Engineering Graphics and Design (EGD) **PAT** is a **compulsory national formal assessment task** that contributes 25% (i.e. 100 marks) towards a learner's final NSC mark, it is essentially the **third NSC examination paper** of EGD. All the **presentation requirements must** therefore **be adhered to and**, with the exception of the required research, **completed at school**, under the supervision of the EGD teacher. **Each learner** must **complete the PAT individually** and ALL the presentations must be **his/her own original work**.

The primary purpose of the EGD PAT is to assess four subjective content and concept topics which are not assessed in the examination papers. These are:

- The design process
- The application of drawing knowledge and drawing skills to the design process
- CAD management and drawings
- The quality and neatness of free-hand, instrument and CAD drawings.

The EGD PAT is therefore designed to develop a learner's ability to integrate and apply knowledge and to demonstrate acquired levels of skills and competency. With the inclusion of the PAT into EGD, the learner is given an opportunity to apply acquired knowledge, skills and values in a creative way through the design process. The learner is given an opportunity to complete the PAT in an environment which is more conducive to the creative processes. This environment should therefore provide the learner with easier access to, and a wider variety of, resource material than would be available in a formal examination.

The various components of the EGD PAT gives the learner an opportunity to demonstrate the level of drawing skill that has been attained in all the appropriate drawing methods through the presentation of the required drawings.

Each EGD PAT consists of two parts:
Part A: The Design Process
Part B: Required working and pictorial drawings

Part A of both PATs requires that the learner demonstrates a clear understanding of, and is able to apply, the design process. As part of the design process, the learner must be able to:

- Identify the problem(s) and formulate a design brief with specifications and constraints
- Conduct and make use of relevant external research in an appropriate way
- Generate a number of own ideas/concepts/solutions analytically and graphically through comprehensive free-hand drawings
- Select a final solution(s) that demonstrates a clear understanding of the design brief within the context of the specifications and constraints
- Present the final solution(s) as working and pictorial drawings
- Provide clear evidence of continuous self-evaluation during the development of the PAT

Part B of both PATs requires that the learner demonstrates and provides evidence of a high level of knowledge and understanding of the concepts and content of Engineering Graphics and Design through the presentation of orthographic drawings and pictorial drawings.

Part A and Part B of both PATs also give the learner the opportunity to demonstrate that a high level of competency and skill has been attained in the following required EGD drawing methods:

- Freehand drawings prepared in pencil
- Instrument drawings prepared in pencil
- Using a CAD (Computer-aided Drawing/Design) system

Two Practical Assessment Tasks (PATs) are included in this document:

- PAT 1 is a design task in the context of civil technology.
- PAT 2 is a design task in the context of mechanical technology.

Each learner must, with the guidance of the teacher, **select ONE** of the PATs contained in this document. Should the learner choose to complete both PATs, only ONE will be considered for summative assessment and promotion purposes.

Elements that make up the PAT mark for Engineering Graphics and Design

ELEMENTS OF THE MARK FOR THE PRACTICAL ASSESSMENT TASK	
ELEMENT	**MARK**
The **design process**	**25**
The **correctness** of the **working and pictorial drawings**	**50**
The **drawing methods** (freehand, instrument and CAD)	**25**
TOTAL	**100**

2. Administration of the PAT

At the beginning of the academic year, the EGD teacher must ensure that **every Grade 12 learner receives a copy of the entire SECTION B** of the PAT document, i.e. **ALL the pages from page 8 to page 24.**

ALL the completed PATs must be submitted in time for summative assessment to be done before the commencement of provincial moderation in the **third term.** The PATs must therefore be **completed in the following phases during the first three terms**:

- **Phase 1:** Design Process (completed by the end of the **1st term**)
- **Phase 2:** Presentation Drawings (completed by the end of the **2nd term**)
- **Phase 3:** Completion of portfolio (before the commencement of moderation in the **3rd term**)

Although the phases could be done either CYCLICALLY or in BLOCK TIMES, it is recommended that ONE ENTIRE DAY per term be allocated for each phase for example during the examinations.

The **teaching/period time** that may be allocated **for the completion of all three phases** of the PAT is **12 hours to a maximum of 16 hours**. Additional non-teaching-/non-period time may, however, also be allocated for the completion of the PAT at the school. However, the **total maximum time** for the completion of all the phases of the PAT should **not exceed 20 hours**.

To ensure that the PAT is completed within the stipulated time, it is essential that the teacher draw up a PAT **pace setter/management plan** for the learners at the beginning of the year. Attached to the pace setter/management plan must be target dates for the completion of the different components of the different phases. This will help learners to assess their own progress and teachers to set up intervention programmes.

NOTE:

- **ALL** the **presentation requirements** of the selected PAT **must be adhered to and**, with the exception of the required research, **completed at school, under guidance and supervision from the EGD teacher,** who must observe the learners' progress at all times.
- **Not adhering to this instruction will be deemed an examination irregularity.**

3. Assessment and moderation of the PAT

3.1 Assessment

Frequent developmental feedback is needed to guide and give support to each learner and to ensure that each learner is on the right track.

Both formal and informal assessment should be conducted throughout the development of the PAT. Informal assessment can be conducted by the learner, a peer, a group of learners or by the teacher. **However, the teacher must conduct ALL the formal assessment,** by **using the official 2014 summative assessment sheet**, **and record the results on the official mark sheets himself/herself.**

The completed PAT must be submitted in time for final formal assessment to be done before the commencement of provincial moderation. **Once the PAT has been formally assessed, the teacher must retain the PAT for the purpose of external moderation**. All the PATs must also be retained at the school for the period of time as prescribed by the Provincial Departments of Education.

3.2 Moderation

Monitoring and/or moderation of the PAT can take place at any time during the development of the PAT. ALL completed presentation requirements of the PAT must therefore always be available at the school. During a moderation process, the moderator will randomly select the PAT files/portfolios that will be moderated. To assist the process of the final provincial moderation, the teacher must supply the moderator with a completed mark sheet(s) and a merit list(s).

During the moderation process, learners may be called upon to explain the functions and principles of operating a CAD system and to demonstrate drawing skills through performing capability tasks.

3.3 Declaration of authenticity

Prior to the final submission of the PAT for formative assessment, ALL the learners and the teacher must complete the Declaration of Authenticity as laid out on the final page of this document.

NOTE:
Only the official 2014 SUMMATIVE ASSESSMENT SHEET (page 23) and the completed DECLARATION OF AUTHENTICITY form (page 24) of this document must be included in the front of the learner's completed PAT file/portfolio.

ENGINEERING GRAPHICS AND DESIGN

2014 GRADE 12 PRACTICAL ASSESSMENT TASK (PAT)

SECTION B (Learner Tasks)

GENERAL INFORMATION AND INSTRUCTIONS:

- The EGD PAT is a **compulsory national formal assessment task** that contributes 25% towards your final National Senior Certificate (NSC) mark.
- This **document contains TWO PATs**, i.e. a civil design project (PAT 1) and a mechanical design project (PAT 2). **You, the learner,** with the guidance of your EGD teacher, **must select ONE** of the PATs contained in this document.
- ALL the **presentation requirements** of the selected PAT **must be adhered to and**, with the exception of the required research, **completed at school**, under the supervision of your EGD teacher**.**
- The PAT must be **completed individually** and ALL the presentations, including the front page and index, must be **your own original work**.
- The PAT must be **completed in phases and within the given time frame** of your teacher's PAT pace setter/management plan.
- ALL **freehand drawings** and **instrument drawings** must be **prepared in pencil**.
- Untidy and messy work, as well as the late submission of presentation requirements, will be penalised.

PRACTICAL ASSESSMENT TASK 1

A CIVIL DESIGN PROJECT

SCENARIO

According to the United States Geological Survey (USGS), South Africa produced 53 million metric tons of iron ore in 2009, making it the world's seventh largest producer. It also estimated, in 2009, that South Africa had 1 000 million tonnes of crude ore reserves and 650 million metric tonnes of iron content reserves.

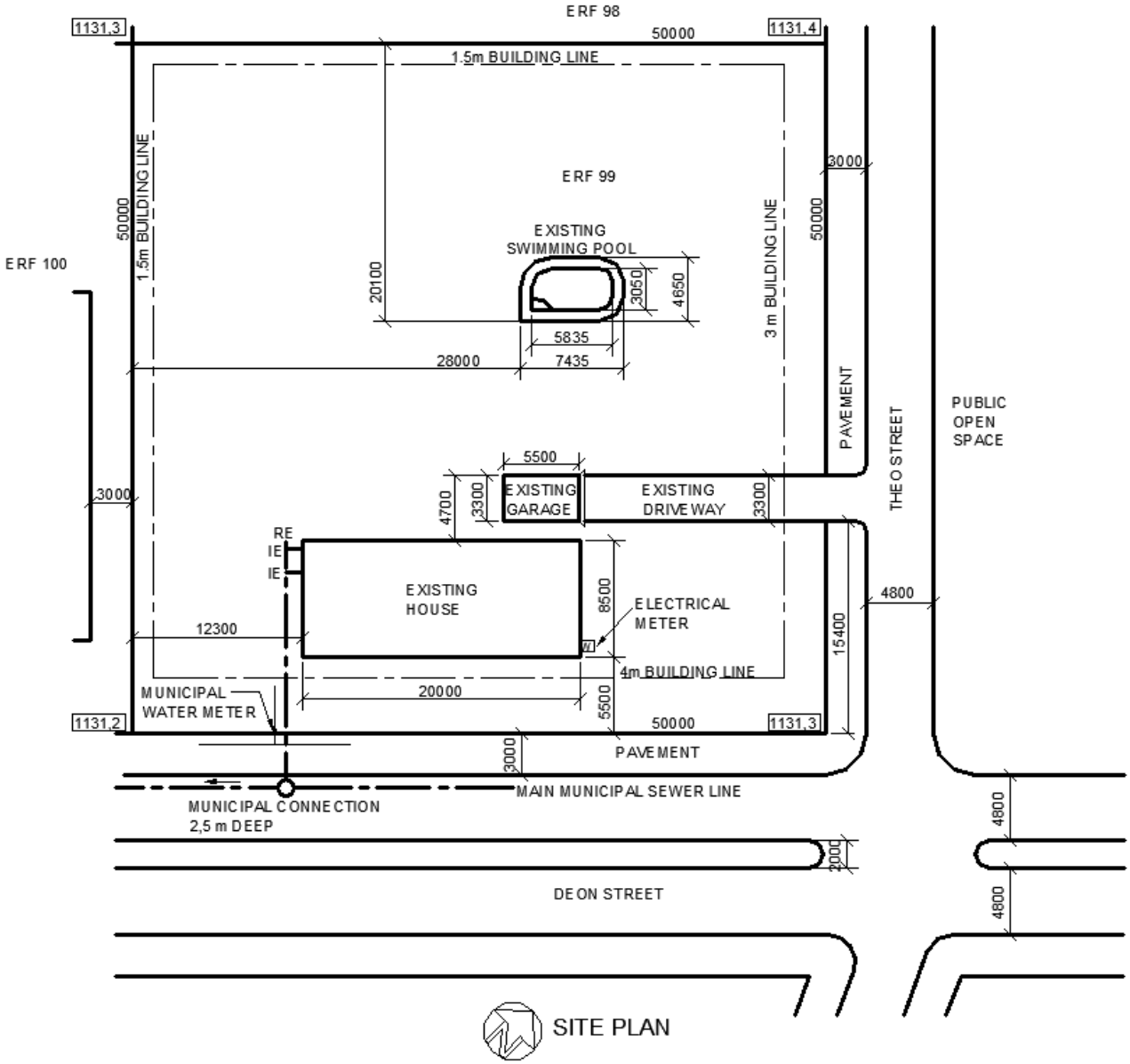
The Kuruman and Kathu region in the Northern Cape is currently experiencing economic growth due to the expansion of iron ore mining. Employment opportunities have given rise to the influx of hundreds of new families to the region. The migration of these families comes with many new challenges, such as the need for housing, infrastructure and schools.

The mining companies in the region have also acknowledged the need to develop **day-care centres** for **children between the ages of 2 and 5 years** and have therefore indicated that they are willing to invest money and resources. To this end, a property on the corner of Deon Street and Theo Avenue in one of the mining developments has been earmarked for this venture. The property currently has an old house, a garage and a swimming pool.

The mining companies have placed an advertised for proposals to be submitted for the building and development of a **modern day-care centre**, which must adhere to official regulations and requirements, on the property.

Given:
The site plan of the property with the existing buildings and swimming pool.

NOTE:
Any details or dimensions not given may be assumed in good proportion.



Specifications for the day-care centre:

NOTE:
ALL existing buildings and features **may be demolished and/or removed**.

Specification for the building:

- It must adhere to ALL the **official regulations and requirements.**
- It must be a **modern single storey structure**(s).
- The entire building must have **sufficient** natural and/or artificial **lighting.**
- There must be **adequate ventilation** throughout the building.
- It must be **big enough** to accommodate **100 children** (about 50 boys and 50 girls).
- It must **include the following**:
  - **FOUR classrooms** so that each age group can be accommodated separately. Each classrooms must make provision for the following:
    - Sufficient space so that it can be used as a classroom and a playroom
    - An area where the children can sleep in the afternoons
    - Additional hand wash facilities
  - Separate and age appropriate **toilet facilities for the children**
  - A **facility** where the younger children can be **washed** or **bathed**
  - An **administrative office(s)**
  - A **sickbay** that makes provision for the following:
    - It must be able to accommodate at least FOUR children
    - It must be directly accessible from the administrative office(s)
  - **A staffroom** that makes provision for the following:
    - Sufficient space to accommodate ALL the staff members
    - A locker for each staff member
    - Separate toilet facilities
    - A kitchenette
  - **A kitchen** with the following:
    - Sufficient space to prepare and serving light meals for the children
    - The kitchen equipment needed to prepare the light meals
    - Kitchen units for all the groceries, crockery and cutlery
    - A large refrigerator
    - A separate storage area for all cleaning equipment and materials
    - Dishwashing facility
  - An **additional covered play area** on the same side as the playground

Specifications for the playground and site:

- It must adhere to ALL the **official regulations and requirements.**
- The **playground** must be **equipped** with sufficient and age appropriate **playground equipment.**
- Additional hand wash facilities
- There must be **carports** for the **staff members.**
- There must be **controlled access.**
- There must be **sufficient security.**

Presentation requirements for the PAT:

Create a PAT file/portfolio containing:
a. A complete **cover page**
b. An **index**
c. The **2014 SUMMATIVE ASSESSMENT SHEET** (see page 23)
d. The completed **DECLARATION OF AUTHENTICITY** (see page 24)

NOTE:
The cover page and index should only be generated during phase 3 of the PAT.

Present the following design process requirements in the PAT file/portfolio after the DECLARATION OF AUTHENTICITY:

NOTE:
Include the following on each page of each design process requirement:
- Clear **numbering** in accordance with the numbers of the presentation requirements
- **Your** (the learner's) **name**
- The **date** of **completion** and **submission**

1. **Identify** the **primary and secondary problem(s)** and formulate a **comprehensive design brief.**
   Include **your own extended and comprehensive** list of **specifications** and **constraints**.

2. **Conduct** your own **research** on:
   - Official regulations and requirements for day-care centres
   - Layouts of day-care centres
   - Age appropriate playground equipment and layouts of playgrounds
   - Environmentally-friendly cooling systems and/or design features

   NOTE:
   - The research must be **relevant** and **usable**.
   - Evidence of **ALL** the **relevant resource material used** must be **presented as proof** that the required research has been done.
   - There must be clear evidence that the research has been used.
   - Include a list of ALL **references (bibliography)**.

3. **Generate THREE** detailed self-explanatory **freehand drawings** of **THREE possible design solutions** for the day-care centre. The freehand drawings must show **dimensions, labels** and **notes**, as well as the **correct presentation** of ALL the **features**.

   NOTE:
   - These drawings must provide clear evidence that a high level of competency has been attained in **freehand drawings** as one of the required **EGD drawing methods.**
   - All the drawings must comply with the *SANS (SABS) 0143 Guidelines.*

4. **Select the best solution,** which demonstrates an in-depth understanding of the design brief within the context of the specifications and constraints, by **evaluating and comparing** the possible design solutions of the **THREE freehand drawings.**
   Include a **summary** of the reasons for selecting the solution.

5. Present the **selected solution** as a set of **working drawings and a pictorial drawing (5.1, 5.2 and 5.3)** that adhere to the following**:**

- All the **working drawings** must be presented on appropriately sized drawing sheets, correctly set up with borders and **complete civil title panels.**
- The drawings must provide clear evidence that a high level of competency has been attained in the following **TWO** required **EGD drawing methods:**
  - o **Instrument drawings**
  - o **CAD (Computer-aided Drawing/Design**)

  NOTE:
  - ➢ **ONE working drawing** (i.e. **5.1 or 5.2**) must be prepared as an **instrument drawing** and the **other** by using a **CAD system**.
  - ➢ The **perspective drawing** (**5.3**) may be prepared **either** as an instrument drawing **or** by using a CAD system.
  - ➢ **Schools that do not have CAD facilities must prepare all the required drawings** (5.1, 5.2 and 5.3) **as instrument drawings.**
- All title panels and drawings must comply with the *SANS 10143 Guidelines.*

5.1 Make a detailed **layout drawing** of the **proposed building** for the day-care centre, **clearly showing all the features**. The drawing must show a **minimum** of **FOUR** orthographic views drawn to a suitable scale(s).
The views must include:

5.1.1 The **floor plan**
5.1.2 A **sectional elevation**
5.1.3 **TWO elevations**, showing the **front view** and **a side view**

The following must be included on all relevant views:

- ALL sanitary, kitchen and other permanent fixtures
- ALL electrical fittings and the wiring detail
- Waste-water disposal systems (sewerage)
- Labels, notes and fixture codes
- Scale(s)
- Dimensions
- Cutting plane(s)
- All hatching detail

5.2 Make a detailed **site plan** drawn to a suitable scale.

The following must be included:

- ALL proposed structures that will be part of the day-care centre
- ALL existing buildings and features that must be demolished and/or removed
- ALL services, sewerage and drainage connections
- Electrical supply
- The controlled access, driveways, parking areas and carports
- The complete layout of the playground
- Labels, notes and fixture codes
- Scale
- Dimensions and corner heights

NOTE: The site plan may contain artistic features.

5.3 Make a detailed **two-point perspective drawing** that will give the viewer a playground view **of the proposed building** of the day-care centre. The horizon line (HL) must be placed 1 metre above the ground in order to produce a child's eye view.

Evidence of the following must be included together with the drawing:

- All views/drawings used to produce the drawing
- The construction/method used to produce the drawing

NOTE:

A copy of the perspective drawing, which may contain artistic features, should be used as the picture for the cover page of the PAT file/portfolio.

6. Provide clear evidence, in the form of a **checklist(s)**, of **continuous self-evaluation** of the **entire process** and of the **meeting** of all the **deadlines** during the development of the PAT.

Assessment criteria

The following assessment tools will be used to assess the PAT:

- The rubric in ANNEXURE A for assessing the **design process**.
  This mark will contribute **25 marks** to the final PAT mark.
- The rubric in ANNEXURE B for assessing the **correctness** of the **presentation drawings**.
  This mark will contribute **50 marks** to the final PAT mark.
- The rubric in ANNEXURE C for assessing the **drawing methods**, i.e. **drawing technique**, the quality of **line work, printing**, **dimensioning et cetera.**
  This mark will contribute **25 marks** to the final PAT mark.

PRACTICAL ASSESSMENT TASK 2

A MECHANICAL DESIGN PROJECT

SCENARIO

You are a member of a team of industrial designers that are employed by a firm that specialises in providing mechanical and industrial design services on **mechanical parts/components** contained within **CHILDREN'S TOYS**.

The designers are tasked with investigating and analysing the design features of an existing toy and to come up with new or improved ideas. The improvement(s) to the toy could be one or more of the following:

- To improve efficiency
- To strengthen its current design
- To simplify its application
- To make it safer

The PAT requires the following stages:

- The first stage involves **selecting/finding a suitable TOY,** which must include **mechanical movement** as part of its operation/function. The toy must be an **assembly** consisting of a **minimum** of **FOUR different parts/components,** for example toy graders, locomotives, dump trucks, cranes, accessories for dolls et cetera.
  NOTE:
  It is not required of you to purchase a new toy. The selected toy should therefore be something that is **already available to you**.

- The second stage involves the **dismantling** of the selected toy so that **all the mechanisms and parts/components** can be **revealed**, **investigated** and **measured**.

- The third stage involves the identification of **ONE** of the **main components** or **combination of components** of the selected toy which could be **improved**, **modified** or **redesigned** in some way. This will necessitate the application of the **Design Process**, as stipulated by the presentation requirements for this PAT.

Specifications for the selected toy:

- Your **teacher must approve** the **toy** in order to ensure that it **meets all the requirements** and that it is of an **appropriate higher-order Grade 12 complexity**.
- The toy must be suitable for **pre-intermediate phase children**, i.e. **younger than 10 years**.
- The toy must be an **assembly** consisting of a **minimum** of **FOUR different parts/ components**.
- **The toy** must include **mechanical movement** as part of its operation/function.
- The **toy** or detailed photographs of the toy, if it is too large**, must be submitted as part of the PAT presentation requirements.**

Presentation requirements for the PAT:

Create a PAT file/portfolio containing:
a. A complete **cover page**
b. An **index**
c. The **2014 SUMMATIVE ASSESSMENT SHEET** (see page 23)
d. The completed **DECLARATION OF AUTHENTICITY** (see page 24)

NOTE:
The cover page and index should only be generated during phase 3 of the PAT.

Present the following design process requirements in the PAT file/portfolio after the DECLARATION OF AUTHENTICITY:

NOTE:
Include the following on each page of each design process requirement:
- Clear **numbering** in accordance with the numbers of the presentation requirements
- **Your** (the learner's) **name**
- The **date** of **completion** and **submission**

1. **Identify** the **primary and secondary problem(s)** and formulate a **comprehensive design brief.**
   Include **your own extended and comprehensive** list of **specifications** and **constraints**.

2. Conduct your own **research** on:
   - All the materials that are used for the parts/components of the selected toy
   - Specific design features and/or function (purpose) of each individual part /component of the selected toy
   - At least THREE other toys and/or products that perform a similar operation/function as the toy you selected, but that differs in terms of design
     NOTE:
     - The research must be **relevant** and **usable**.
     - Evidence of **ALL** the **relevant resource material used** must be **presented as proof** that the required research has been done.
     - There must be clear evidence that the research has been used.
     - Include a list of ALL **references (bibliography)**.

3. **Generate THREE** detailed self-explanatory **freehand drawings** that will clearly show **THREE different possible improvements, modifications** or **redesigns** to the identified **main component(s)** of the **selected toy.**
   The freehand drawings must show **dimensions, labels** and **notes**, as well as the **correct presentation** of ALL the **features**.
   NOTE:
   - These drawings must provide clear evidence that a high level of competency has been attained in **freehand drawings** as one of the required **EGD drawing methods.**
   - All the drawings must comply with the *SANS (SABS) 10111 Guidelines*

4. **Select the best solution/improvement/modification/redesign,** which demonstrates an in-depth understanding of the design brief within the context of the specifications and constraints, by **evaluating and comparing** the possible design solutions of the **THREE freehand drawings**.
   Include a **summary** of the reasons for selecting the solution.

5. Present the **selected toy and solution** as a set of **working drawings and a pictorial drawing (5.1, 5.2 and 5.3)** that adhere to the following**:**

- All the **working drawings** must be presented on appropriately sized drawing sheets, correctly set up with borders and **complete civil title panels.**
- The drawings must provide clear evidence that a high level of competency has been attained in the following **TWO** required **EGD drawing methods:**
  - o **Instrument drawings**
  - o **CAD (Computer-aided Drawing/Design**)

  NOTE:
  - ➢ **ONE working drawing** (i.e. **5.1 or 5.2**) must be prepared as an **instrument drawing** and the **other** by using a **CAD system**.
  - ➢ The **perspective drawing** (**5.3**) may be prepared **either** as an instrument drawing **or** by using a CAD system.
  - ➢ **Schools that do not have CAD facilities must prepare all the required drawings** (5.1, 5.2 and 5.3) **as instrument drawings.**
- All title panels and drawings must comply with the *SANS 10143 Guidelines.*

5.1 Make an **assembly drawing** of the **selected toy** clearly showing all the parts **before** any improvements, modifications or redesigns have been effected. The drawing must show a **minimum** of **FOUR appropriate** orthographic views drawn to a suitable scale.
The views must include:
5.1.1 The **front view**
5.1.2 A **second primary (main) view**
5.1.3 Any **TWO** other **secondary views**
NOTE: TWO of the **views must be sectioned** or contain **types of section.**

The following must be included:
- Scale
- Dimensions
- Labels and notes
- Cutting planes
- All hatching detail

5.2 Make a **detailed drawing** of the **identified main component(s)** of the toy, clearly showing the **selected solution/improvement/modification/redesign**. The drawing must show a **minimum** of **THREE appropriate** orthographic views drawn to a suitable scale.
The views must include:
5.2.1 The **front view**
5.2.2 Any **TWO** other **views**
NOTE: ONE of the **views must be sectioned** or contain **types of section.**

The following must be included:
- A comprehensive list of explanatory labels and notes
- Relevant welding and/or machining symbols
- Scale
- Dimensions
- Cutting plane(s)
- All hatching detail

5.3 Make a detailed **isometric drawing** of the selected toy or of the improved, modified or redesigned main component(s) of the toy, drawn to a suitable scale.

Evidence of the following must be shown:

- All views/drawings used to produce the drawing
- The constructions/methods used to produce the drawing

NOTE:

- Include relevant labels and notes.
- A copy of the isometric drawing, which may contain artistic features, should be used as the picture for the cover page of the PAT file/portfolio.

6. Provide clear evidence, in the form of a **checklist(s)**, of **continuous self-evaluation** of the **entire process** and of the **meeting** of all the **deadlines** during the development of the PAT.

Assessment criteria

The following assessment tools will be used to assess the PAT:

- The rubric in ANNEXURE A for assessing the **design process**.
  This mark will contribute **25 marks** to the final PAT mark.
- The rubric in ANNEXURE B for assessing the **correctness** of the **presentation drawings**.
  This mark will contribute **50 marks** to the final PAT mark.
- The rubric in ANNEXURE C for assessing the **drawing methods**, i.e. **drawing technique**, the quality of **line work, printing**, **dimensioning et cetera.**
  This mark will contribute **25 marks** to the final PAT mark.

A SIMPLIFIED RUBRIC FOR THE ALLOCATION OF MARKS

MARK ALLOCATION for all aspects/criteria of the PAT			
DESCRIPTION FOR MARK	**GENERAL INDICATOR**	**± %**	**MARK**
ALL/MORE than ALL the REQUIREMENTS are met. **- PERFECT -**	**Error free**	**100%**	**10**
ALL (ALMOST ALL) the REQUIREMENTS are met. **- OUTSTANDING -**	**Very few errors**	**90% +**	**9**
ALMOST ALL (MOST OF) the REQUIREMENTS are met. **- VERY GOOD -**	**Few errors**	**80% +**	**8**
The REQUIREMENTS are **SUBSTANTIALLY** met. **- GOOD -**	**Some errors**	**70% +**	**7**
The REQUIREMENTS are **ADEQUATELY** met. **- SATISFACTORY -**		**60% +**	**6**
The REQUIREMENTS are **MODERATELY** met. **- ACCEPTABLE -**	**Many errors**	**50% +**	**5**
ONLY **SOME** of the REQUIREMENTS are met. **- UNACCEPTABLE -**		**40% +**	**4**
VERY FEW of the REQUIREMENTS are met. **- NOT ACHIEVED -**	**Mostly wrong**	**30% +** Only a few correct features	**3**
The REQUIREMENTS are **NOT** met. **- VERY POOR -**	**Completely wrong**	**29% & LESS** Something done very wrongly/poorly	**2**
			1
NOT DONE!	**No work handed in!**	**Nothing to mark!**	**0**

ANNEXURE A

RUBRIC FOR ASSESSING THE DESIGN PROCESS

LEVELS OF PERFORMANCE											
MARK ALLOCATION	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
	100%	**99%–90%**	**89%–80%**	**79%–70%**	**69%–60%**	**59%–50%**	**49%–40%**	**39%–30%**	**29%–20%**	**19%–1%**	**0%**
1. A **design brief** demonstrating a clear understanding of the scenario with a list of the **specifications** and **constraints**	The **design brief** with a **comprehensive** list of the **specifications** and the **constraints** demonstrating an **in-depth** and **comprehensive** understanding of the scenario			The **design brief** with a **complete** or **incomplete** list of the **specifications** and the **constraints** demonstrating a **satisfactory** understanding of the scenario			The **design brief** with the possibility of an incomplete list of the **specifications** and/or the **constraints** demonstrating an **elementary** understanding of the scenario		A **design brief** with either a very vague or no list of **specifications** and/or **constraints** demonstrating **little** or **no** understanding of the scenario		
2. Evidence of **relevant 'external' research** with the inclusion of a **bibliography**	Shows evidence of **in-depth** and **thorough relevant 'external' research** that is **used** within the **final solution as well as a comprehensive bibliography**			Shows evidence of **satisfactory relevant 'external' research** of which **some** is **used** within the **final solution** as well as a **satisfactory bibliography**			Shows evidence of **limited research** of which **little to none** is **used** within the final solution with a **limited bibliography**		Shows **very little** evidence of any **research** or research that is **inappropriate with little to no bibliography**		
3. THREE **Freehand drawings of detailed** possible **solutions**	**NOTE: Also assess** each possible solution's **'design'** according to the **specifications, constraints** and the **relevant 'external' research!**										
	The **possible solutions** are very clearly, logically and comprehensively presented with **dimensions** and **notes** with ALL the **features presented correctly**			The **possible solutions** are clearly presented with **dimensions** and **notes** with most **features presented correctly**			The p**ossible solutions** are not clear presented with no **dimensions** and **notes** with only some **features presented correctly**		Shows **little** to **no** possible solutions		
4. **Selecting** the **final/best solution** which demonstrates a clear **understanding** of the **design brief**	A **thorough selection process** and a **final/best solution** that demonstrates a clear **in-depth** and **comprehensive** understanding of the **design brief** (correctness/functionality/practicality of design)			A **substantial selection process** and a **final solution** that demonstrates a **satisfactory** understanding of the **design brief**			An **incomplete** or **no selection process** and a **final solution** that demonstrates a **limited** understanding of the **design brief**		**No selection process** and a **final solution** that demonstrates **little** to **no** understanding of the **design brief**		
6. Clear evidence of continuous **self-evaluation** and the **meeting** of **deadlines** of **all** the **requirements** of the PAT	Clear evidence of continuous **comprehensive self-evaluation** of all the requirements of the PAT and all the requirements were **handed in** on the **due dates**			Evidence of **satisfactory self-evaluation of** most of the requirements of the PAT and most of the requirements were **handed in** by the **extension date**			Evidence of **limited self-evaluation** of some of the requirements of the PAT and **few** deadlines were **met. Extension dates were missed** but **most stages** were **handed in.**		**Little** or **no** evidence of any **self-evaluation** shown and **none** of the **deadlines** were met		
7. The **presentation** of the **complete PAT file/portfolio**	**All** the **required presentations** of the PAT are **complete** and **neatly presented** in the prescribed **sequence in** the **PAT file/portfolio**			**Most** of the **required presentations** of the PAT are **complete** and **neatly presented** in the prescribed **sequence in** the **PAT file/portfolio**			**Some** of the **required presentations** of the PAT are **complete** and **presented** in a **file/portfolio**		**Very few** of the **required presentations** are **complete** and poorly **presented**		

ANNEXURE B

RUBRIC FOR ASSESSING CORRECTNESS OF THE WORKING AND PICTORIAL DRAWINGS

LEVELS OF PERFORMANCE												
MARK ALLOCATION			**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
			100%	**99%–90%**	**89%–80%**	**79%–70%**	**69%–60%**	**59%–50%**	**49%–40%**	**39%–30%**	**29%–20%**	**19%–1%**	**0%**
All drawing sheets are appropriately set up with a **border** and an **appropriate title block/panel.**			**All** drawing sheets are appropriately set up with **more than** the **minimum requirements**.			**Most** of the drawing sheets are appropriately set up **with** the **minimum requirements**.			Only **some** of the drawing sheets are set up **with less** than the **minimum requirements**.		**Little or no** page set up is evident.		
Orthographic drawings	**5.1**	**NOTE: Assess** each view's **accuracy**, **correctness** and **design** (where relevant for PAT 1) according to the **selected solution** (PAT 1 only), the **stipulated requirements** and **correct EGD drawing principals**											
		5.1.1	**View 1** PAT 1: **Plan** PAT 2: **Front view**	The view meets the **minimum requirements** and has **no/a few errors.**		The view meets most of the **minimum requirements** but contains **some errors.**			The view contains **less than** the **minimum requirements** and contains **many errors.**		**Little or no** evidence of the required view		
		5.1.2	**View 2** PAT 1: **Section** PAT 2: **2nd main view**	The view meets the **minimum requirements** and has **no/a few errors.**		The view meets most of the **minimum requirements** but contains **some errors.**			The view contains **less than** the **minimum requirements** and contains **many errors.**		**Little or no** evidence of the required view		
		5.1.3	**View 3** PAT 1: **2 elevations** PAT 2: **2 secondary views**	The views meet the **minimum requirements** and have **no/a few errors.**		The views meet most of the **minimum requirements** but contain **some errors.**			The views contain **less than** the **minimum requirements** and contain **many errors.**		**Little or no** evidence of the required view		
	5.2	**NOTE: Assess** each view's **accuracy**, **correctness** and **design** (PAT 1) according to the **selected solution,** the **stipulated requirements** and **correct EGD drawing principals**.											
		PAT 1: **Site plan** PAT 2: **Detailed drawing**	The site plan/detailed drawing meets the **minimum** requirements and has **no/a few errors.**			The site plan/detailed drawing meets the **minimum** requirements but contains **some errors**.			The site plan/detailed drawing contains **less than the minimum** requirements and contains **many errors.**		**Little or no** evidence of required views		
Pictorial drawing	**5.3**	The **correct drawing method** and **presentation** PAT 1: **2-point perspective** PAT 2: **Isometric**	**Thorough** knowledge of the correct pictorial **drawing method** and the answer meets the requirements and reflects the **correct size and proportion** of all the features and has **no/a few errors** and the presentation is very good/**outstanding.**			**Satisfactory** knowledge of the correct pictorial **drawing method** and the answer meets the requirements and reflects the **correct size and proportion** of most of the features but contains **some errors** and the **presentation** is **satisfactory.**			**Some** knowledge of the pictorial **drawing method** is shown, but the answer reflects poor or incorrect **size and proportion** and many of the features contain **many errors** and the **presentation** is **poor.**		**Little or no** evidence of required drawings		

ANNEXURE C

RUBRIC FOR ASSESSING DRAWING METHOD, SKILLS AND PRESENTATION

LEVELS OF PERFORMANCE												
MARK ALLOCATION		**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
		100%	**99%–90%**	**89%–80%**	**79%–70%**	**69%–60%**	**59%–50%**	**49%–40%**	**39%–30%**	**29%–20%**	**19%–1%**	**0%**
Freehand drawing	**TECHNIQUE** The drawings display a **correct freehand drawing technique** as well as good **proportion** and **size**	The drawings display **excellent drawing technique and all the** features show **outstanding proportion** and **size**.			The drawings display **satisfactory drawing technique and most/some** features show **satisfactory proportion** and **size**.			The drawings display **poor drawing technique** and the features show **poor proportion** and **size.**		The drawings display very **poor drawing technique** and the features show **very little or no correct proportion**.		
	Final drawing presentation is **neat** and there is consistency of **line work/line quality** and **printing**.	Drawings are **very neat** and all line work/line quality, printing and dimensioning are **outstanding** and **consistent**.			Drawings are **neat** and line work/line quality, printing and dimensioning are **generally good** and **mostly consistent**.			Drawings are **untidy** with **inconsistent** line work/line quality, printing and dimensioning.		The line work/line quality, printing and dimensioning are **unacceptable**.		
Pencil instrument drawing	**TECHNIQUE** The drawings display the **correct use** of **drawing instruments, drawing methods** and **techniques**.	The drawings display the correct use of drawing **instruments** and an **outstanding** application of **drawing methods and techniques**.			The drawings display the correct use of drawing **instruments** and a **satisfactory** and **mostly correct** application of **drawing methods and techniques**.			The drawings display the correct use of drawing **instruments** and a **poor** and **often incorrect** application of **drawing methods and techniques**.		The drawings display an incorrect use of drawing **instruments** with **incorrect** applications of **drawing methods and techniques**.		
	The final drawing presentation is **neat** and there is consistency of **line work/line quality** and **printing**.	Drawings are **very neat** and all line work/line quality, printing and dimensioning are **outstanding** and **consistent**.			Drawings are **very neat** and the line work/line quality, printing and dimensioning are **generally good** and **mostly consistent**.			Drawings are **untidy** and the line work/line quality, printing and dimensioning are **inconsistent**.		The line work/line quality, printing and dimensioning are **unacceptable**.		
CAD drawing	**(ANNEXURE D) RUBRIC FOR ASSESSING CAD DRAWING SKILLS, KNOWLEDGE AND ABILITY**											
	TECHNIQUE The **level** of **competence** displayed in **using** a **CAD system**	Displays a **high level** of skills, knowledge and ability in using a **CAD** system			Displays a **satisfactory level** of skills, knowledge and ability in using a **CAD** system			Displays a **poor level** of skills, knowledge and ability in using a **CAD** system		Shows **little to no skills**, knowledge or ability in using a **CAD** system		
	The **layout** and **correctness** of the **final drawing presentation**	**100%–80%**		**79%–70%**	**69%–60%**		**59%–50%**	**49%–40%**	**39%–30%**	**29%–0%**		

ANNEXURE D

A RUBRIC FOR ASSESSING CAD DRAWING SKILLS, KNOWLEDGE AND ABILITY

LEVELS OF PERFORMANCE											
MARK ALLOCATION	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
	100%	**99%–90%**	**89%–80%**	**79%–70%**	**69%–60%**	**59%–50%**	**49%–40%**	**39%–30%**	**29%–20%**	**19%–1%**	**0%**
Set up a drawing interface	Is able to set up a drawing interface without any assistance, displaying a high level of skills, knowledge and ability			Is able to set up a drawing interface with a little assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to set up a drawing interface with some assistance displaying a lack of skills, knowledge and ability		Shows little to no understanding of setting up a drawing interface		
Set up a 2-D/3-D drawing environment	Is able to set up a 2-D/3-D drawing environment without any assistance, displaying a high level of skills, knowledge and ability			Is able to set up a 2-D/3-D drawing environment with a little assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to set up a 2-D/3-D drawing environment with some assistance, displaying a lack of skills, knowledge and ability		Shows little to no understanding of setting up a 2-D/3-D drawing environment		
Set up layers with properties assigned to each layer	Is able to set up layers and assign properties to each layer without any assistance displaying a high level of skills, knowledge and ability			Is able to set up layers and assign properties to each layer with a little assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to set up layers and assign properties to each layer with some assistance, displaying a lack of skills, knowledge and ability		Shows little to no ability to set up layers and assign properties to each layer		
Set up a drawing sheet with a border and a title block	Is able to set up a drawing sheet with a border and a title block without any assistance, displaying a high level of skills, knowledge and ability			Is able to set up a drawing sheet with a border and a title block with some assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to set up a drawing sheet with a border and a title block with some assistance, displaying a lack of skills, knowledge and ability		Shows little to no ability to set up a drawing sheet with a border and a title block		
Show evidence of the correct use of the drawing tools	Thorough and detailed evidence is shown of using the drawing tools correctly.			Satisfactory evidence is shown of using the drawing tools correctly.			Limited evidence is shown of using the drawing tools correctly.		Little to no evidence is shown of using the drawing tools correctly.		
Show ability to save and retrieve work	Is able to save and retrieve work without any assistance, displaying a high level of skills, knowledge and ability			Is able to save and retrieve work with a little assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to save and retrieve work with some assistance, displaying a lack of skills, knowledge and ability		Shows little to no ability to save/retrieve work		
Show ability to plot a drawing	Is able to plot a drawing without any assistance, displaying a high level of skills, knowledge and ability			Is able to plot a drawing with a little assistance, displaying a satisfactory level of skills, knowledge and ability			Is able to plot a drawing with some assistance, displaying a lack of skills, knowledge and ability		Shows little to no ability to plot work		
The **layout** and **correctness** of the **final drawing presentation**	**100%–80%**		**79%–70%**	**69%–60%**		**59%–50%**	**49%–40%**	**39%–30%**	**29%–0%**		

PRACTICAL ASSESSMENT TASK 2014
SUMMATIVE ASSESSMENT SHEET

SCHOOL: ……

NAME OF LEARNER: ……
(SURNAME AND INITIALS)

EXAMINATION NUMBER: ……

PART A: Design Process

ANNEXURE A

	CRITERIA		MARK
1	A **design brief** demonstrating a clear understanding of the scenario with a list of the **specifications** and **constraints**		
2	Evidence of **relevant 'external' research** with the inclusion of a **bibliography**		
3	**THREE freehand drawings** of detailed possible solutions	**1st Freehand drawing**	
		2nd Freehand drawing	
		3rd Freehand drawing	
4	**Selecting** the **final/best solution** which demonstrates a clear **understanding** of the **design brief**		
6	Clear evidence of **continuous self-evaluation** and the **meeting** of **deadlines** of **all** the **requirements**		
7	The **presentation** of the **complete PAT file/portfolio**		
	Criteria Total		
	CALCULATION		
	Teacher's TOTAL		
	TOTAL: A		**/ 25**
	Moderated TOTAL		
	TOTAL: A		**/ 25**

PART B: Working and pictorial drawings

	CRITERIA			MARK
All drawing sheets are appropriately set up with a **border** and an **appropriate title block/panel**.				
Orthographic drawings ANNEXURE B	**Assess** each view's **accuracy, correctness** and **design** (where relevant) according to the **selected solution,** the **stipulated requirements** and **EGD drawing principals**	**5.1.1**	**View 1** PAT 1: **Plan** PAT 2: **Front view**	
		5.1.2	**View 2** PAT 1: **Section** PAT 2: **2nd main view**	
		5.1.3	**View 3** PAT 1: **2 elevations** PAT 2: **2 secondary views**	
		5.2	PAT 1: **Site plan** PAT 2: **Detailed drawing**	
Pictorial drawing ANNEXURE B		**5.3**	The correct **drawing method** and the **presentation** of the drawing PAT 1: **2-p perspective** PAT 2: **Isometric**	
	Criteria Total			
	CALCULATION			
	Teacher's TOTAL			
	TOTAL: B			**/ 50**
	Moderated TOTAL			
	TOTAL: B			**/ 50**

Drawing competency and skill

		CRITERIA	MARK
Freehand drawings ANNEXURE C	**TECHNIQUE**	The drawings display a **correct freehand drawing technique** as well as good **proportion** and **size**	
		The final drawing presentation is **neat** and there is consistency of **line work/line quality, printing** and **dimensioning**.	
Pencil instrument drawings: ANNEXURE C	**TECHNIQUE**	The drawings display the **correct use of drawing instruments, drawing methods** and **techniques**.	
		The final drawing presentation is **neat** and there is consistency of **line work/line quality, printing** and **dimensioning**.	
CAD drawings ANNEXURE D	**TECHNIQUE**	The **level** of **competence** displayed in **using** a **CAD system**	
		The **layout** and **correctness** of the **final drawing presentation**	
		TOTAL without CAD	
		TOTAL with CAD	
		CALCULATION without CAD	
		CALCULATION with CAD	
		Teacher's TOTAL	
		TOTAL: C	**/ 25**
		Moderated TOTAL	
		TOTAL: C	**/ 25**

TEACHER'S TOTAL:	A + B + C =	**/ 100**
MODERATED TOTAL:	A + B + C =	**/ 100**

ASSESSOR: Initial	**MODERATOR: Initial**

DECLARATION OF AUTHENTICITY

To be submitted with each learner's Practical Assessment Task portfolio

NAME OF THE SCHOOL: ……

NAME OF LEARNER: ……
(SURNAME AND INITIALS)

EXAMINATION NUMBER: ……

I hereby declare that all the contents of the Practical Assessment Task submitted by myself for assessment is my own original work and has not been plagiarised, copied from someone else or previously submitted for assessment.

_____ ___ / ___ / 2014
SIGNATURE OF CANDIDATE **DATE** (DD / MM / YYYY)

NAME OF TEACHER: ……
(SURNAME AND INITIALS)

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

_____ ___ / ___ / 2014
SIGNATURE OF TEACHER **DATE** (DD / MM / YYYY)

SCHOOL STAMP