



# **basic education**

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

## **ENGINEERING GRAPHICS AND DESIGN**

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

**GRADE 12**

**2019**

**These guidelines consist of 27 pages.**

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## 1. INTRODUCTION

The 17 Curriculum and Assessment Policy Statement subjects which contain a practical component all include a practical assessment task (PAT):

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

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.

## SECTION A (TEACHER GUIDELINES)

### 2. 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 content and concept topics which are not assessed in the examination papers. These are:

- The design process
- The application of the design process
- 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 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 do the following:

- Identify the problem(s) and formulate a design brief with specifications and constraints
- Conduct and use relevant research in an appropriate way
- Generate a number of ideas/concepts/solutions analytically and graphically through comprehensive freehand drawings
- Select a final solution that demonstrates a clear understanding of the design brief
- 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 working 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 and the aid of instruments
- 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.

### 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
<b>TOTAL</b>	<b>100</b>

### 3. 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 27.

The completed phases of ALL the PATs must be submitted in time for summative assessment to be done before the commencement of phase moderation in the second and third terms and 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 1<sup>st</sup> term)
- PHASE 2: Presentation drawings (completed by the end of the 2<sup>nd</sup> term)
- PHASE 3: Completion of portfolio (before the commencement of provincial/ final moderation in the 3<sup>rd</sup> term or at the latest before the commencement of the preparatory examinations)

Although the phases could be done either CYCLICALLY or in BLOCK TIMES, as indicated in the EGD CAPS, it is recommended that ONE ENTIRE DAY per term, e.g. as an extra paper during the June examinations, be allocated for each phase.

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 timeframe it is essential that the teacher draw up a PAT pacesetter/management plan, with target dates that are in line with the 2019 EGD Annual Teaching Plan and the prescribed completion of the phases of the 2019 EGD PAT, for the learners at the beginning of the year. 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 the guidance and supervision of the EGD teacher, who must observe the learners' progress at all times. Not adhering to this instruction will be deemed to be an examination irregularity.
- It is the teacher's responsibility to ensure that each learner's PAT is of an appropriate higher-order Grade 12 complexity.

#### **4. ASSESSMENT AND MODERATION OF THE PAT**

##### **4.1 Assessment**

**The assessment of the PAT must be done according to the relevant Assessment Criteria and Checklist included .**

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 therefore be conducted throughout the development of the PAT. Informal assessment can be conducted by the learner, a peer or by the teacher. However, the teacher must conduct ALL the formal assessment and record the results on the official mark sheets HIMSELF/HERSELF. EACH LEARNER'S MARKS MUST ALSO BE INDICATED ON THE OFFICIAL 2019 SUMMATIVE ASSESSMENT SHEET IN THE LEARNER'S PAT FILE/PORTFOLIO.

The completed PAT must be submitted in time for final formal assessment to be done before the commencement of provincial/final moderation or, at the latest, before the preparatory examinations in the 3<sup>RD</sup> TERM. 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.

**Clarification of level descriptor and the verification of marks:**

- **A 1-mark level descriptor:**
  - 1 mark is allocated to elementary/basic presentation requirements and/or drawing features that should be done correctly.
  - 1 mark is therefore not for done or not done, but for DONE CORRECTLY, i.e. 1 for correct or 0 (zero) for incorrect, even if done, e.g. if hatching on a floor plan is done, but not done correctly.
- **A 2-mark level descriptor:**
  - A 0 (zero) must be allocated if not done or if LITTLE/NO evidence of knowledge of the requirement and/or drawing feature(s) is shown and/or when very poor, e.g. the design.
  - 1 mark must be allocated if done and if SOME evidence of knowledge is shown, but the requirement(s) and/or drawing feature(s) is not completely correct and/or complete and/or compliant and/or achieved and/or clear and/or just average.
  - 2 marks may only be allocated if ALL, or almost ALL, evidence of knowledge is shown and the requirement(s) and/or drawing feature(s) is at least 80%+ correct and/or complete and/or compliant and/or achieved and/or clear and/or very good.
- **A 7-mark level descriptor:**
  - The 7-mark descriptor of the simplified rubric on page 45 of the EGD CAPS must be used. This implies that a 7 can only be allocated if the presentation requirement is completely, i.e. 100% correct/compliant.
- **Verification of ALL final marks out of 10:**
  - Each final mark out of 10 for each assessment criteria must be verified according to the simplified 10-mark rubric on page 25 of this document. This implies that a 10 can only be allocated if the presentation requirement is completely, i.e. 100%, correct/compliant.

**NOTE:** The concept of '**benchmarking**', i.e. the identification and mark allocation of the best example(s) for each assessment criterion, should be applied when the PATs are being assessed.

## 4.2 Moderation

The moderation of the PAT must be done according to the included relevant Assessment Criteria and Checklists.

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. However, in order to make provision for intervention programmes, the following phase moderation must be done during the second and third terms:

- PHASE 1: Design process (beginning of the 2<sup>nd</sup> term before the commencement of PHASE 2 or the June examinations)
- PHASE 2: Presentation drawings (beginning of the 3<sup>rd</sup> term before the commencement of phase 3)

During the moderation process the moderator will randomly select the PAT files/portfolios that have to be moderated. To assist the process of 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.

#### **4.3 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 set out on page 27 of this document.

#### **5. CONCLUSION**

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

**SECTION B (LEARNER TASKS)****General information and instructions:**

- The EGD PAT is a compulsory national formal assessment task that contributes 100 marks 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 research, be completed at school, under the guidance and 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.
- The PAT must be of an appropriate higher-order Grade 12 complexity.
- The PAT will be assessed according to the relevant assessment criteria and checklist, i.e. pages 15 and 16 or pages 22 and 23, included in this PAT document.
- The relevant included checklist must also be used to do and provide clear evidence of continuous self-evaluation.
- Untidy and messy work, as well as the late submission of presentation requirements, will be penalised.

**6. PRACTICAL ASSESSMENT TASK 1 (PAT 1)****A civil design project****Scenario**

A local property development company commissioned you to design a small shopping centre on a piece of land in your area that has recently been rezoned from small holding to commercial, and supply them with a set of working drawings of your design solution.

The owners have decided to develop the property in two phases. The first phase involves designing a small single-storey shopping centre that will be situated toward the rear, north-eastern side of the property. The total area of the shopping centre may not exceed 220 m<sup>2</sup>, and consist of three adjoining shops of which the entrances, i.e. the fronts of the shops, must face the road.

The main tenant will be a general dealer who will take up most of the floor space. The general store must have ten switch socket outlets placed around the store for electrical equipment, as well as a fire escape and built-in counter(s) for a till point(s)

The other two tenants will be a baker and a butcher. The bakery must have a floor area of less than 60 m<sup>2</sup>. It must have five switched socket outlets, a double sink, a display cabinet to present prepared products and a built-in counter for a till point.

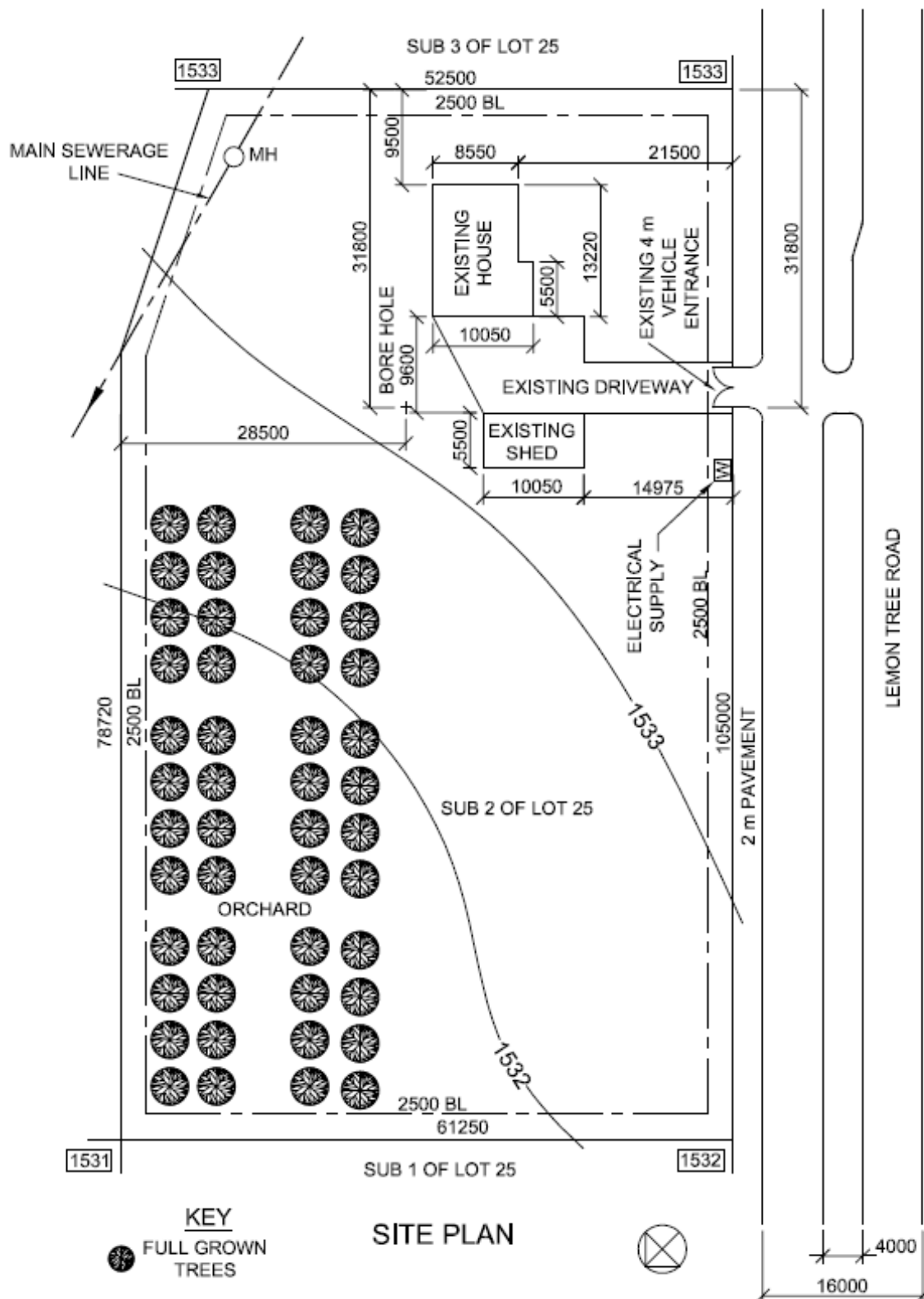
The butchery must have a floor area of less than 70 m<sup>2</sup>, which must include a walk-in refrigerator that may not take up more than 18 m<sup>2</sup> of the floor space. It must have six switched socket outlets, a double sink, a refrigerated display cabinet to present prepared meat products and a built-in counter for a till point. It is also essential that there is adequate overhead lighting for the entire shopping centre.

All three shops must have large shop front windows and doors. A mono-pitch roof must be attached to the front of the shopping centre and cover a 1,8 m wide walkway that will run the length of the three shops. The front of the shopping centre must have a decorative façade to attract customers. In front of the shopping centre there must be a small flower garden as well as 80 demarcated parking bays, five of which must be for disabled persons. Trees must be planted or retained for shade around the parking area.

A courtyard, surrounded by a 3 m high brick wall with a single sliding gate, must be placed at the rear of the building for all three shops. The entrance to the courtyard may not be visible from the road. The courtyard must include an area for deliveries, an area for waste disposal as well as the entrances to toilet facilities for the staff. The toilet facilities must be included in the total area of the small shopping centre and must only be accessible from the courtyard. The male facility must have one urinal, a toilet and a hand wash basin and the female facility two toilets and a hand wash basin.

The proposed second phase will include developing a 20 m x 25 m area adjacent to the road as the forecourt of a petrol station, as well as converting the existing house into a motor spares shop and workshop. The existing house may therefore not be demolished. Trees may be removed, but the existing road entrance must be incorporated into the design. The existing borehole must also remain as it is the only supply of water to the property.

**Given:** The existing site plan of the property to be used for the development of the proposed new shopping centre.



**PHASE 1: PRESENTATION REQUIREMENTS**

1. Referring to the given scenario, identify the problem(s) and formulate your own design brief in two paragraphs. The first paragraph must identify the problem(s) and describe the primary objectives of the project. The second paragraph must give a clear overview of your role in the project, as well as the process that you are going to follow to come up with a design solution.

Include the following as part of the design brief:

- A list of ALL the given specification, as well as a list of FIVE of your own specifications, for the project
- A list of FIVE constraints that are relevant to the project
- A management plan, which specifies target dates for the completion of each presentation requirement.

2. Conduct your own research on

- Layouts and placing of till points of small bakeries and small butcheries.
- The types and sizes of refrigerated display units and walk-in refrigerators for a butchery
- Designs and construction detail of mono pitch roofs
- Sizes and details of shop frontage glass windows and doors

**NOTE:**

- The research must be relevant and usable.
- Evidence of the research material must be included and presented as proof that the required research has been done.
- The presentation of the research material may not exceed THREE A4 or TWO A3 pages per research topic.
- There must be clear evidence that the research has been used in the presentation drawings.
- Include a list of ALL references (bibliography).

3. Prepare neat detailed freehand drawings of the layout, i.e. floor plan, of TWO possible design solutions for the proposed new shopping centre. Each freehand drawing must show the correct presentation of ALL the building features, the permanent fixtures, the walk-in refrigerator, the two display cabinets, the courtyard, the walkway, the roof line as well as the primary dimensions and labels.

The calculation of the total area of the shopping centre as well as the floor areas of the bakery, the butchery and the walk-in refrigerator of each solution, must be clearly shown in a table on each freehand drawing.

**NOTE:**

- Electrical fittings and waste-water disposal systems (sewerage) are NOT required for the freehand drawings.
- ALL the features and fixtures must be drawn proportionally the same size. Grid/graph paper must be therefore used.
- These drawings must provide clear evidence that a high level of competency has been attained in freehand drawing.
- All the drawings must comply with the *SANS 10143 Guidelines*.

4. Select the best solution, which demonstrates an in-depth understanding of the design brief within the context of the specifications and constraints.  
The TWO freehand drawing solutions must be compared by:
- Creating a table with a minimum of SIX descriptor criteria.
  - Describe the positives and/or negatives of each criterion.
  - Applying a simple rating scale to each criterion.

Complete the exercise by writing a comprehensive summary giving reasons for the selected freehand solution.

Any further changes to the selected freehand solution must be included in the summary.

## PHASE 2: PRESENTATION REQUIREMENTS

5. Present the selected solution as a set of working drawings and a pictorial drawing (5.1, 5.2 and 5.3) that meet the following criteria:
- All the working drawings must be presented on appropriately sized drawing sheets, correctly set up with borders. ONLY the first drawing sheet (i.e. for 5.1.1) must be set up with a complete civil title panel.
  - The drawings must provide clear evidence that a high level of competency had been attained in the following required drawing methods:
    - Instrument drawing
    - CAD (Computer-aided Drawing/Design)
- NOTE:**
- ONE entire working drawing (i.e. 5.1.1, 5.1.2 and 5.1.3 or 5.2) must be prepared using drawing instruments and the other using a CAD system.
  - The perspective drawing (5.3) may be prepared either by using drawing instruments 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) using drawing instruments.
  - The title panel and ALL the working drawings must comply with the *SANS 10143 Guidelines*.
- 5.1 Draw, to a suitable scale(s), detailed layout drawings of the selected shopping centre, courtyard and walkway, clearly showing all the required building features.

**The layout drawings must show the following FOUR orthographic views:**

5.1.1 The floor plan

5.1.2 A sectional elevation(s) that shows the detail of an external door, a window and the walkway

5.1.3 TWO elevations, showing the front view and a side view

**Include the following on ALL relevant views:**

- The roof detail or roof lines of both the building and the walkway
- ALL permanent fixtures as well as the two display cabinets and the walk-in refrigerator
- ALL electrical fittings and the wiring detail
- Waste-water disposal systems (sewerage)
- Titles, labels and notes
- Scale(s)
- Dimensions
- Cutting plane(s)
- All hatching detail
- North point

## 5.2 Draw, to a suitable scale, a detailed SITE PLAN.

### Included the following:

- ALL the given general site details and features
- ALL existing structures and the borehole
- The proposed new building, walkway, courtyard, garden and trees
- The water storage tanks and purification systems
- The outline of the proposed future petrol station forecourt
- ALL the demarcated parking bays
- ALL sewerage and drainage detail
- Electrical supply
- Scale
- Dimensions, including the reference/setting out/positional dimension and corner heights
- North point

## 5.3 Draw a DETAILED HUMAN EYE VIEW, i.e. with the horizon line (HL) $\pm 1,7$ m above the ground line (GL), TWO-POINT PERSPECTIVE DRAWING that clearly shows the covered walkway and the entrances to the proposed new shopping centre.

### Evidence of the following must be included:

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

### NOTE:

Use a COPY of the perspective drawing, which may contain artistic features, as the picture for the cover page of the PAT file/portfolio.

## PHASE 3 presentation requirements

### Create a PAT file/portfolio containing:

- A complete cover page
- An index
- The 2019 SUMMATIVE ASSESSMENT SHEET (see page 26)
- The completed DECLARATION OF AUTHENTICITY (see page 27)

### Present the following phase 1 and phase 2 presentation requirements in the PAT file/portfolio after the DECLARATION OF AUTHENTICITY:

1. ALL the design brief requirements
2. Evidence of ALL the resource material used for the required research
3. The TWO freehand drawings of the possible design solutions
4. ALL the evidence of the selection of the best solutions
5. ALL the required working drawings (5.1 and 5.2) and the perspective drawing (5.3)
6. Using the included checklist (assessment criteria), clear evidence of continuous self-evaluation and the meeting of deadlines, in accordance with the management plan, during the development of the PAT.

### NOTE:

Include the following on each page of each presentation requirement:

- Clear numbering according to the numbers of the presentation requirements
- Your (the learner's) name
- The date of completion and submission

**Assessment criteria and checklist for the 2019 EGD Civil PAT**

- The SUMMATIVE ASSESSMENT SHEET on page 26 of the EGD PAT document must be used to indicate the final totals out of 10 for each assessment criterion.
- The contribution of each aspect of the PAT is as follows:
  - The design process, i.e. presentation requirements numbers 1, 2, 3, 4, 6 and 7, will contribute 25 marks to the final PAT mark out of 100
  - The working drawings and the pictorial drawing, i.e. presentation requirement number 5, will contribute 50 marks to the final PAT mark out of 100
  - Drawing methods, drawing skills and presentation, which should be assessed according to ANNEXURE A, will contribute 25 marks to the final PAT mark out of 100

<b>ASSESSMENT CRITERIA AND CHECKLIST FOR THE 2019 EGD CIVIL PAT</b>								
1-mark level descriptor	0	No evidence/not done or not correct/complete/compliant/achieved/very poor			Checked	Mark allocation	Own marks/ notes/ comments	
	1	All evidence shown/correct/complete/compliant/achieved/clear						
2-mark level descriptor	0	No evidence/not done (very poor)			Checked	Mark allocation	Own marks/ notes/ comments	
	1	Evidence shown but not correct/complete/compliant/achieved/clear (average)						
	2	All evidence shown/correct/complete/compliant/achieved/clear (very good)						
<b>1. Design Brief</b>								
1.1	1 <sup>st</sup>	paragraph of design brief: identify problem(s) and what is required to be done				2		
1.2	2 <sup>nd</sup>	paragraph of design brief: your role & the process to be followed				2		
1.3		Lists of the given specifications (1) and FIVE own specification (1)				2		
1.4		List of FIVE constraints that are relevant to the project				2		
1.5		A management plan with target dates for ALL the presentation requirements				2		
					<b>TOTAL</b>	<b>10</b>		
<b>2. Research</b>		(This should be restricted to a <b>maximum</b> of THREE A4 or TWO A3 pages per topic)						
<b>Relevant &amp; usable research on:</b>	2.1	Layouts and placing of till points of small bakeries & butcheries				2		
	2.2	Types & sizes of refrigerated display units & walk-in refrigerators				2		
	2.3	Designs and construction detail of mono pitch roofs				2		
	2.4	Sizes and details of shop frontage glass windows and doors				2		
		Evidence that the research has been used				1		
	Bibliography/List of sources included				1			
					<b>TOTAL</b>	<b>10</b>		
<b>3. Freehand drawings of TWO possible design solutions</b>					<b>Final mark for each solution</b>			
Assess each freehand solution as follows:		ALL the building features, courtyard & walkway included		1	<b>Solution 1</b>	<b>10</b>		
		Correct presentation of all building features		2				
		ALL fixtures, walk-in refrigerator & display cabinets included		1				
		Correct presentation of all fixtures according to <i>SANS 10143</i>		2				
		Relative size/proportion of features to each other		2	<b>Solution 2</b>	<b>10</b>		
		Primary labels(1) + primary dimensions(2) (1 + 2 = 3)		3				
		2 area calculations clearly shown & within constraints		2				
		Design: functionality & effective utilisation of space		2				
		<b>Subtotal = 15 ÷ 1,5 = TOTAL</b>		<b>10</b>				
(1 = 1; 2 = 1; 3 = 2; 4 = 3; 5 = 3; 6 = 4; 7 = 5; 8 = 5; 9 = 6; 10 = 7; 11 = 7; 12 = 8; 13 = 9; 14 = 9; 15 = 10)								
<b>4. Selecting the best freehand solution</b>		(This must be a separate presentation)						
	Table created for an easily understandable presentation of the selection process				2			
	Using at least SIX descriptor criteria to evaluate and compare				2			
	Describing the positives and/or negatives against each criterion				2			
	A simple descriptor rating scale used to score each solution against each criterion				2			
	A comprehensive summary of the reasons for the selected/final solution				2			
					<b>TOTAL</b>	<b>10</b>		
<b>5. Layout drawings and a pictorial drawing of selected solution</b>								
	<b>Drawing sheet preparation</b>							
	Appropriately sized drawing sheets				1			
	Borders on all the drawing sheets of working drawings				2			
	Complete civil title panel on the first working drawing's drawing sheet				7			
	<b>NOTE:</b> Use the 7-mark simplified rubric on page 45 of the EGD CAPS.				<b>TOTAL</b>	<b>10</b>		
<b>5.1 Detailed layout drawings of the proposed new building</b>								
5.1.1	<b>Floor plan showing:</b>							
	Correlation with selected freehand solution & selection process summary				1			
	ALL internal and external walls (2) + the roofline (1)		(2 + 1 = 3)		3			
	ALL doors and windows				2			
	ALL permanent fixtures, the walk-in refrigerator & the display cabinets				2			
	ALL electrical fittings and the wiring detail				2			
	Waste-water disposal systems (sewerage)				2			
	Title, labels and notes (2) + dimensions (2)		(2 + 2 = 4)		4			
	Hatching detail (1) + cutting plane (1)		(1 + 1 = 2)		2			
	Suitable scale selected and correctly indicated (1) + North point (1)		(1 + 1 = 2)		2			
					<b>Subtotal = 20 ÷ 2 = TOTAL</b>	<b>10</b>		

<b>ASSESSMENT CRITERIA AND CHECKLIST FOR THE 2019 EGD CIVIL PAT</b>				
5.1.2	<b>Sectional elevation</b> showing:			
	Section correct according to the indicated cutting plane(s)		2	
	Foundation, slab and wall detail		2	
	Door(s) and window(s) detail		2	
	Roof detail of the building and walkway		2	
	Labels and notes		2	
	Suitable scale selected and indicated correctly		1	
	Dimensions		2	
	ALL hatching detail		2	
<b>Subtotal = 15 ÷ 1,5 = TOTAL</b>			<b>10</b>	
(1 = 1; 2 = 1; 3 = 2; 4 = 3; 5 = 3; 6 = 4; 7 = 5; 8 = 5; 9 = 6; 10 = 7; 11 = 7; 12 = 8; 13 = 9; 14 = 9; 15 = 10)				
5.1.3	<b>TWO elevations</b> , showing the <b>front view</b> and a <b>side view</b>			
	Prescribed views selected/shown		1	
	External walls and ALL other external features, including the FFL		2	
	Door and window detail		2	
	Roof detail, including rainwater items		2	
	Waste-water disposal system (sewerage)		2	
	Views drawn to same scale as the floor plan		1	
<b>TOTAL</b>			<b>10</b>	
5.2	<b>Detailed site plan</b>			
	Site correctly drawn and ALL the <b>given</b> site detail/features are included		2	
	New building, courtyard, walkway, garden, parking & future petrol station included		2	
	ALL sewerage and drainage detail + the water storage tanks and purification systems		2	
	Dimensions, incl. reference/setting out dimension, corner heights, labels and notes		2	
	Suitable scale selected and indicated correctly		1	
	North point		1	
<b>TOTAL</b>			<b>10</b>	
5.3	<b>Detailed perspective drawing</b> showing the <b>front</b> of the new building			
	Evidence of views/drawings and construction/method used for the drawing		1	
	Correct orientation showing the front (1) and the correct HL high for a human eye view (1)		2	
	Perspective drawing/answer		7	
<b>TOTAL</b>			<b>10</b>	
6.	<b>Continuous self-evaluation</b> and the <b>meeting of deadlines</b>			
	Checklist completed as evidence of continuous self-evaluation (mark out of <b>10 ÷ 2</b> )		5	
	The meeting of ALL the deadlines during the development (mark out of <b>10 ÷ 2</b> )		5	
	<i>(NOTE: Use 7-mark rubric on page 45 of the EGD CAPS)</i>			
<b>TOTAL</b>			<b>10</b>	
7.	<b>Presentation of the complete PAT file/portfolio</b>			
	Cover page with a copy of the perspective drawing		1	
	Index		1	
	Summative assessment sheet and declaration		1	
	Correct sequencing of ALL presentation requirements		1	
	Name and numbering on ALL the presentation requirements		1	
	General impression of file/portfolio, e.g. binding, appearance etc. (mark out of <b>10 ÷ 2</b> )		5	
<b>TOTAL</b>			<b>10</b>	
<b>Assessment of drawing methods, drawing skills and presentation</b>				
a	<b>Freehand drawings</b>			
	Freehand drawing methods and skills (See ANNEXURE A on page 24)		10	
	Neatness, line work/line quality and printing (See ANNEXURE A on page 24)		10	
b	<b>Instrument drawings</b>			
	Use of drawing instruments, drawing methods and skills (See ANNEXURE A on page 24)		10	
	Neatness, line work/line quality and printing (See ANNEXURE A on page 24)		10	
c	<b>CAD drawings</b>			
	Competence displayed in using a CAD system/program (See ANNEXURE A on page 24)		10	
	Layout and correctness of the drawings presentation (See ANNEXURE A on page 24)		10	

## 7. PRACTICAL ASSESSMENT TASK 2 (PAT 2)

### A mechanical design project

#### Scenario

You are employed as a draughtsperson at a design consulting firm that is participating in a national competition run by the Department of Water and Sanitation. They are looking for design solutions to improve **WATER CONTROL DEVICES**. Examples of these devices include, but are not be restricted to, water meters, stop valves, timer taps, float control devices, adjustable showerheads, water sprayers and sprinklers, rain meters, irrigation control devices etc.

You are tasked with investigating and analysing the design features of an EXISTING water control device and are required to design an IMPROVEMENT(S) to the device, which could be one or more of the following:

- Improved efficiency
- To strengthen its current design
- To simplify its application

#### The PAT includes the following stages:

- The FIRST stage involves finding a suitable water control device, which must consist of a minimum of THREE components, of which ONE or more must involve movement as part of the operation/function.

**NOTE:** You are NOT required to purchase a new water control device. The device should be one that is readily available to you.

- The SECOND stage involves the dismantling of the water control device so that all the components and mechanisms are revealed and can be investigated and measured.
- The THIRD stage requires the identification of ONE of the main components, or a combination of components, which could be improved, modified or redesigned in some way. This will necessitate the application of the design process, as stipulated below in the presentation requirements.

#### Requirements and specifications for the water control device:

- The water control device must be small enough so that it can be submitted as part of the PAT presentation.
- The water control device must be an assembly consisting of a minimum of THREE separate components that includes movement as part of its operation/function.
- Electrically/electronically operated or controlled devices may NOT be used.
- Your teacher must approve the water control device that you have selected to ensure that it meets the requirements and that a PAT of an appropriate higher-order Grade 12 complexity can be produced.

**PHASE 1 presentation requirements**

1. Referring to the given scenario, identify the problem(s) and formulate your own design brief in two paragraphs. The first paragraph must identify the problem(s) and describe the primary objectives of the project. The second paragraph must give a clear overview of your role in the project, as well as the process that you are going to follow to come up with a design solution.

**Include the following as part of the design brief:**

- Your own comprehensive list of specifications for the selected water control device
- Your own list of constraints for the selected water control device.
- A management plan, which specifies target dates for the completion of each presentation requirement.

2. **Conduct your own research on:**

- The material that is used for each individual component of the water control device
- The specific design features and/or function/purpose of each individual component of the water control device
- The design, components and mechanical movement of at least TWO other water control devices that are similar, i.e. have the same function/purpose, to the one that you have selected.

**NOTE:**

- The research must be relevant and usable.
- Evidence of the relevant resource material gathered and used must be presented as proof that the required research had been done.
- The presentation of the research material may not exceed THREE A4 or TWO A3 pages per research topic.
- The first two research requirements will be primarily hands-on investigative research, which can be presented by using the comprehensive set of detailed photographs taken during the second stage, with labels and/or notes indicating the material and the function (purpose) of each individual part/component.
- The evidence of the other TWO water control devices may be in the form of a comprehensive set of pictures and/or photographs together with explanatory labels and notes.
- There must be clear evidence that the research was used.
- Include a list of ALL references (bibliography).

3. Prepare TWO sets of neat detailed freehand drawings of TWO possible solutions of the proposed improvement, modification or re-design to the identified main component(s) of the selected water control device.

Each set of freehand drawings must consist of relevant orthographic views and an isometric drawing(s) that show dimensions, labels and explanatory notes, as well as the correct presentation of ALL the features. Include a short explanation of the possible improvement, modification or re-design.

**NOTE:**

- ALL the features and fixtures must be drawn proportionally the same size. Grid/graph paper must be therefore used.
- These drawings must provide clear evidence that a high level of competency has been attained in freehand drawings
- All the drawings must comply with the *SANS 10111 Guidelines*.

4. Select the best improvement/modification/re-designed solution, which demonstrates an in-depth understanding of the design brief within the context of the specifications and constraints

The TWO freehand drawing solutions must be compared by:

- Creating a table with a minimum of FOUR descriptor criteria
- Describe the positives and/or negatives of each criterion
- Applying a simple rating scale to each criterion

Complete the exercise by writing a comprehensive summary giving reasons for the selected freehand solution.

Any further changes to the selected freehand solution must be included in the summary.

### **PHASE 2 presentation requirements**

5. Present the selected water control device and the selected improvement/modification/re-design as a set of working drawings and a pictorial drawing (5.1, 5.2 and 5.3) that meet the following criteria:

- All the working drawings must be presented on appropriately sized drawing sheets, correctly set up with borders. ONLY the first working drawing's drawing sheet (i.e. for 5.1) must be set up with an appropriate and complete mechanical title block.
- The drawings must provide clear evidence that a high level of competency had been attained in the following required EGD drawing methods:

- Instrument drawing
- CAD (Computer-aided Drawing/Design)

**NOTE:**

- ONE entire working drawing (i.e. 5.1 or 5.2) must be prepared by using drawing instruments and the other using a CAD system.
- The isometric drawing (5.3) may be prepared either using drawing instruments 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) by using drawing instruments
- ALL the working drawings must comply with the *SANS 10111* Guidelines.

- 5.1 Draw, to a suitable scale and in third angle orthographic projection, an assembly drawing of the selected water control devices clearly showing all the parts before any improvements, modifications or re-designs have been affected.

The assembly drawing must show the following FOUR views:

- 5.1.1 The front view
- 5.1.2 A second primary view
- 5.1.3 Any other TWO secondary views

**NOTE:** TWO of the views must be sectioned or contain types of sections.

**Include the following:**

- Scale
- Dimensions
- Labels and notes
- Cutting planes
- All hatching detail
- Projection symbol

- 5.2 Draw, to a suitable scale and in third angle orthographic projection, a detailed drawing of the identified component(s) of the water control device, clearly showing the selected improved/modified/re-designed component(s).

The detailed drawing must show the following THREE views:

5.2.1 **The front view**

5.2.2 **Any other TWO views**

**NOTE:** ONE of the views must be sectioned or contain a type of section.

**Include the following:**

- Comprehensive explanatory labels and notes
- Relevant welding and/or machining symbols (if required)
- Relevant tolerances (if required)
- Scale
- Dimensions
- Cutting plane(s)
- All hatching detail

- 5.3 Draw, to a suitable scale, a detailed isometric drawing of the water control device or of the improved, modified or re-designed component(s).

**NOTE:**

- Evidence of ALL auxiliary views and constructions used to produce the drawing, must be clearly shown.
- Use a copy of the isometric drawing, which may contain artistic features, as the picture for the cover page of the PAT file/portfolio.

### **PHASE 3 PRESENTATION REQUIREMENTS**

**Create a PAT file/portfolio containing:**

- A complete cover page
- An index
- The 2019 SUMMATIVE ASSESSMENT SHEET (see page 26)
- The completed DECLARATION OF AUTHENTICITY (see page 27)

**Present the following phase 1 and phase 2 presentation requirements in the PAT file/portfolio after the DECLARATION OF AUTHENTICITY:**

1. ALL the design brief requirements
2. Evidence of ALL the resource material used for the required research
3. The TWO freehand drawings of the possible design solutions
4. ALL the evidence of the selection of the best solutions
5. ALL the required working drawings (5.1 and 5.2) and the isometric drawing (5.3)
6. Using the included checklist (assessment criteria), clear evidence of continuous self-evaluation and the meeting of deadlines, in accordance with the management plan, during the development of the PAT.

**NOTE:**

Include the following on each page of each presentation requirement:

- Clear numbering according to the numbers of the presentation requirements
- Your (the learner's) name
- The date of completion and submission

**Assessment criteria and checklist for the 2019 EGD Mechanical PAT**

- The SUMMATIVE ASSESSMENT SHEET on page 26 of the EGD PAT document must be used to indicate the final totals out of 10 for each assessment criterion.
- The contribution of each aspect of the PAT is as follows:
  - The design process, i.e. presentation requirements numbers 1, 2, 3, 4, 6 and 7, will contribute 25 marks to the final PAT mark out of 100
  - The working drawings and the pictorial drawing, i.e. presentation requirement number 5, will contribute 50 marks to the final PAT mark out of 100
  - Drawing methods, drawing skills and presentation, which should be assessed according to ANNEXURE A, will contribute 25 marks to the final PAT mark out of 100

<b>ASSESSMENT CRITERIA AND CHECKLIST FOR THE 2019 EGD MECHANICAL PAT</b>							
1-mark level descriptor	0	No evidence/not done or not correct/complete/compliant/achieved/very poor			Checked	Mark allocation	Own notes/Comments
	1	All evidence shown/correct/complete/compliant/achieved/clear					
2-mark level descriptor	0	No evidence/not done (very poor)			Checked	Mark allocation	Own notes/Comments
	1	Evidence shown but not correct/complete/compliant/achieved/clear (average)					
	2	All evidence shown/correct/complete/compliant/achieved/clear (very good)					
<b>1</b>	<b>Design Brief</b>						
1.1	1 <sup>st</sup>	paragraph of design brief: identify problem(s) and what is required to be done				2	
1.2	2 <sup>nd</sup>	paragraph of design brief: your role & the process to be followed				2	
1.3	A comprehensive list of the specifications of the selected water control device				2		
1.4	List of at least THREE constraints of the selected water control device				2		
1.5	A management plan with target dates for ALL the presentation requirements				2		
					<b>TOTAL</b>	<b>10</b>	
<b>2</b>	<b>Research</b> (This should be restricted to a maximum of THREE A4 or TWO A3 pages per research topic)						
<b>Relevant and usable research on:</b>	2.1	Materials used for each component of the selected device				2	
	2.2	Design features/function/purpose of each components				2	
	2.3.1	The design and movement of another similar item No. 1				2	
	2.3.2	The design and movement of another similar item No. 2				2	
	Evidence that the research has been used				1		
Bibliography/List of sources included				1			
					<b>TOTAL</b>	<b>10</b>	
<b>3</b>	<b>Freehand drawings of TWO possible design solutions</b>				<b>Final mark for each solution</b>		
Assess each freehand solution as follows:	Relevant orthographic views		2	<b>Solution 1</b>	<b>10</b>		
	Isometric drawing		2				
	Correct presentation of ALL the features		1				
	The relative size of all features & fixtures to each other		2				
	Labels and explanatory notes		2	<b>Solution 1</b>	<b>10</b>		
	Dimensioning		2				
	Description of improvement/modification/re-design		2				
	Functionality of improvement/modification/re-design		2				
<b>Subtotal = 15 ÷ 1,5 = TOTAL</b>			<b>10</b>				
(1 = 1; 2 = 1; 3 = 2; 4 = 3; 5 = 3; 6 = 4; 7 = 5; 8 = 5; 9 = 6; 10 = 7; 11 = 7; 12 = 8; 13 = 9; 14 = 9; 15 = 10)							
<b>4</b>	<b>Selecting the best freehand solution</b> (This must be a separate presentation)						
Table created for an easily understandable presentation of the selection process				2			
Using at least FOUR relevant and self-explanatory criteria to evaluate and compare				2			
Describing the positives and/or negatives against each criterion				2			
A simple descriptor rating scale used to score each solution against each criterion				2			
A comprehensive summary of the reasons for the selected/final solution				2			
					<b>TOTAL</b>	<b>10</b>	
<b>5</b>	<b>Working drawings and a pictorial drawing of water control device</b>						
<b>Drawing sheet preparation</b>							
Appropriately sized drawing sheets				1			
Borders on all the drawing sheets of working drawings				2			
Appropriate and complete mechanical title block on the first working drawing (5.1)				7			
<b>NOTE: Use the 7-mark simplified rubric on page 45 of the EGD CAPS.</b>			<b>TOTAL</b>	<b>10</b>			
<b>5.1</b>	<b>Assembly drawing of the water control device, before any improvements/modifications/redesigns</b>						
5.1.1	<b>Front view before any changes</b>						
ALL the parts included and drawn correctly according to the actual device				2			
All hatching detail or, if not sectioned, ALL external features				2			
ALL bolts and nuts and other fastening methods correct in ALL FOUR views				2			
Labels and notes for ALL FOUR views				2			
Projection symbol				1			
Suitable scale selected and indicated correctly for ALL FOUR views				1			
					<b>TOTAL</b>	<b>10</b>	

<b>ASSESSMENT CRITERIA AND CHECKLIST FOR THE 2019 EGD MECHANICAL PAT</b>				
<b>5.1.2</b>	<b>Top view before any changes</b>			
	ALL the parts included and drawn correctly according to the actual device		2	
	All hatching detail or, if not sectioned, external features		2	
	Dimensions for ALL FOUR views		2	
	ALL centre lines on ALL FOUR views		2	
	ALL FOUR views drawn correctly in third-angle orthographic projection		2	
		<b>TOTAL</b>	<b>10</b>	
<b>5.1.3</b>	<b>TWO other secondary views before any changes</b>			
	Appropriate secondary views selected		2	
	ALL the parts included and drawn correctly according to the actual device		2	
	All hatching detail or, if not sectioned, external features		2	
	TWO views sectioned or contain types of sections		2	
	Correct cutting planes for the TWO sectional views and/or types of sections		2	
		<b>TOTAL</b>	<b>10</b>	
<b>5.2</b>	<b>Detailed drawing of the selected improvement/modification/redesign</b>			
	Appropriate view selected as the front view and is drawn correctly		2	
	TWO other relevant views selected and drawn correctly		2	
	Improvement/modification/re-design correlates with selected freehand solution		2	
	Comprehensive explanatory labels and notes		2	
	Dimensions		2	
	ONE view sectioned, or contain types of sections, and drawn correctly		2	
	Cutting plane(s)		1	
	ALL hatching detail		2	
	Relevant welding symbols and/or machining symbols and/or tolerances		2	
	Projection symbol		1	
	Suitable scale selected and indicated correctly		1	
	Drawing is in third-angle orthographic projection		1	
		<b>Subtotal = 20 ÷ 2 = TOTAL</b>	<b>10</b>	
<b>5.3</b>	<b>Detailed isometric drawing</b>			
	Suitable scale selected and indicated correctly		1	
	Evidence of ALL auxiliary views and constructions used for the drawing		2	
	Isometric drawing/answer (NOTE: Use 7-mark rubric on page 45 of the EGD CAPS)		7	
		<b>TOTAL</b>	<b>10</b>	
<b>6</b>	<b>Continuous self-evaluation and the meeting of deadlines</b>			
	Checklist completed as evidence of continuous self-evaluation	(mark out of 10 ÷ 2)	5	
	The meeting of ALL the deadlines during the development	(mark out of 10 ÷ 2)	5	
		<b>TOTAL</b>	<b>10</b>	
<b>7</b>	<b>Presentation of the complete PAT file/portfolio</b>			
	Cover page with a copy of the isometric drawing		1	
	Index		1	
	Summative assessment sheet and declaration		1	
	Correct sequencing of ALL presentation requirements		1	
	Name and numbering on ALL the presentation requirements		1	
	General impression of file/portfolio, e.g. binding, appearance etc.	(mark out of 10 ÷ 2)	5	
		<b>TOTAL</b>	<b>10</b>	
<b>Assessment of drawing methods, drawing skills and presentation</b>				
<b>a</b>	<b>Freehand drawings</b>			
	Freehand drawing methods and skills	(See ANNEXURE A on page 24)	10	
	Neatness, line work/line quality and printing	(See ANNEXURE A on page 24)	10	
<b>b</b>	<b>Instrument drawings</b>			
	Use of drawing instruments, drawing methods and skills	(See ANNEXURE A on page 24)	10	
	Neatness, line work/line quality and printing	(See ANNEXURE A on page 24)	10	
<b>c</b>	<b>CAD drawings</b>			
	Competence displayed in using a CAD system/program	(See ANNEXURE A on page 24)	10	
	<b>Layout and correctness of the drawings presentation</b>	(See ANNEXURE A on page 24)	10	

8. ANNEXURE A: RUBRIC FOR ASSESSING DRAWING METHODS, DRAWING 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	METHODS AND SKILLS	The drawings display <b>correct freehand drawing methods and skills</b> as well as the method used to <b>ensure good proportion and size</b>	The drawings display <b>excellent drawing methods and skills</b> and the <b>method used to ensure outstanding proportion and size</b> .	The drawings display <b>satisfactory drawing methods and skills</b> and the <b>method used to ensure satisfactory proportion and size</b> .	The drawings display <b>poor drawing methods and skills</b> and there is little to no evidence of the method used which resulted in <b>poor proportion and size</b> .							The drawings display <b>very poor drawing methods and skills</b> and <b>no method</b> was used to ensure <b>correct proportion</b> .	
	Final drawing <b>presentation</b> is <b>neat</b> and there is consistency of <b>line work/line quality, printing and dimensioning</b>		Drawings are <b>very neat</b> and all <b>line work/line quality, printing and dimensioning</b> are <b>outstanding</b> and <b>consistent</b> .	Drawings are <b>neat</b> and <b>line work/line quality, printing and dimensioning</b> are <b>generally good</b> and <b>mostly consistent</b> .	Drawings are <b>untidy</b> with <b>inconsistent line work/line quality, printing and dimensioning</b> .							The <b>line work/line quality, printing and dimensioning</b> are <b>unacceptable</b> .	
Instrument drawing	METHODS AND SKILLS	The drawings display the <b>correct use of drawing instruments, drawing methods and skills</b> .	The drawings display the correct use of <b>drawing instruments</b> and an <b>outstanding</b> application of <b>drawing methods and skills</b> .	The drawings display the correct use of drawing <b>instruments</b> and a <b>satisfactory</b> and <b>mostly correct</b> application of <b>drawing methods and skills</b> .	The drawings display poor use of drawing <b>instruments</b> and a <b>poor</b> and <b>incorrect</b> application of <b>drawing methods and skills</b> .							The drawings display an incorrect use of drawing <b>instruments</b> with <b>incorrect</b> applications of <b>drawing methods and skills</b> .	
	The final drawing <b>presentation</b> is <b>neat</b> and there is consistency of <b>line work/line quality, printing and dimensioning</b>		Drawings are <b>very neat</b> and all <b>line work/line quality, printing and dimensioning</b> are <b>outstanding</b> and <b>consistent</b> .	Drawings are <b>neat</b> and the <b>line work/line quality, printing and dimensioning</b> are <b>generally good</b> and <b>mostly consistent</b> .	Drawings are <b>untidy</b> and the <b>line work/line quality, printing and dimensioning</b> are <b>inconsistent</b> .							The <b>line work/line quality, printing and dimensioning</b> are <b>unacceptable</b> .	
CAD drawing	METHODS AND SKILLS	The level of <b>competence</b> displayed in <b>using a CAD system</b>	Displays a <b>high level</b> of skills, knowledge and ability in using a <b>CAD system</b>	Displays a <b>satisfactory level</b> of skills, knowledge and ability in using a <b>CAD system</b>	Displays a <b>poor level</b> of skills, knowledge and ability in using a <b>CAD system</b>							Shows <b>little to no skills</b> , knowledge or ability in using a <b>CAD system</b>	
	The <b>layout</b> of the final drawing is <b>correct</b> and the <b>line work, printing and dimensioning</b> is <b>compliant and consistent</b>		The <b>layout</b> of the drawings is <b>correct</b> and the <b>line work, printing and dimensioning</b> are <b>compliant and consistent</b>	The <b>layout</b> of the drawings is <b>acceptable</b> and the <b>line work, printing and dimensioning</b> are <b>mostly compliant and consistent</b>	The <b>layout</b> of the drawings is <b>very poor</b> and the <b>line work, printing and dimensioning</b> are <b>not compliant and inconsistent</b>							The <b>layout, line work, printing and dimensioning</b> are <b>unacceptable</b> .	

## 9. A SIMPLIFIED RUBRIC FOR THE VERIFICATION AND ALLOCATION OF MARKS

### NOTE:

- The final mark out of 10 of each assessment criterion, i.e. the overall level of achievement according to the presentation requirement, **must be verified according to this rubric.**
- This rubric must also be used to allocate marks for all aspects of the assessment criteria which require a mark out of 10.

VERIFICATION AND MARK ALLOCATION			
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 met <b>SUBSTANTIALLY.</b> - GOOD -	Some errors	70% +	7
The REQUIREMENTS are met <b>ADEQUATELY.</b> - SATISFACTORY -		60% +	6
The REQUIREMENTS are met <b>MODERATELY.</b> - ACCEPTABLE -	Many errors	50% +	5
ONLY <b>SOME</b> of the REQUIREMENTS are met. - UNACCEPTABLE -		40% +	4
<b>VERY FEW</b> of the REQUIREMENTS are met. - NOT ACHIEVED -	Mostly wrong	30% + Only a few correct features	3
The REQUIREMENTS are <b>NOT</b> met. - VERY POOR -	Completely wrong	29% and LESS Something done incorrectly/poorly	2
			1
<b>NOT DONE!</b>	No work handed in!	Nothing to mark!	0

**10. PRACTICAL ASSESSMENT TASK 2019: SUMMATIVE ASSESSMENT SHEET**

**PRACTICAL ASSESSMENT TASK 2019  
SUMMATIVE ASSESSMENT SHEET**

NAME OF SCHOOL: ..... DISTRICT: .....  
 NAME OF LEARNER: ..... (NAME AND SURNAME)  
 NAME OF TEACHER: ..... (NAME AND SURNAME)  
 NAME OF MODERATOR: ..... (NAME AND SURNAME) DATE: .....

PART A: Design Process		PART B: Working and pictorial drawings		Drawing competency and skill					
CRITERIA		MARK		CRITERIA		MARK			
1	A design brief demonstrating a clear understanding of the scenario and the specifications, constraints and a management plan	All drawing sheets are appropriately set up with a border and an appropriate title block/panel.		Freehand drawing: ANNEXURE A	METHOD	The drawings display correct freehand drawing methods and skills and the method used to ensure proportion and size			
2	Evidence of relevant and usable research with the inclusion of a bibliography	Orthographic drawings Assess each view's accuracy and correctness according to the selected solution/device, the stipulated requirements and drawing principals	5.1.1		View 1 PAT 1: Plan PAT 2: Front view	The final drawing presentation is neat and there is consistency of line work/line quality, printing and dimensioning			
3	TWO detailed freehand drawings of possible solutions  1st Solution  2nd Solution		5.1.2		View 2 PAT 1: Section PAT 2: 2nd main view	Instrument drawing: ANNEXURE A	METHOD	The drawings display the correct use of drawing instruments, drawing methods and skills	
			5.1.3		View 3 PAT 1: 2 elevations PAT 2: 2 secondary view		The final drawing presentation is neat and there is consistency of line work/line quality, printing and dimensioning		
4	Selecting the best solution which demonstrates a clear understanding of the design brief		5.2	PAT 1: Site plan PAT 2: Detailed drawing	CAD drawing: ANNEXURE A	METHOD	The level of competence displayed in using a CAD system		
6	Clear evidence of evaluation and the meeting of deadlines of all the requirements	Pictorial drawing 5.3	The correct drawing method and the presentation of the drawing PAT 1: 2-point perspective PAT 2: Isometric	The layout of the final drawing is correct and the line work, printing and dimensioning is compliant and consistent					
7	The presentation of the complete PAT file/portfolio				NO CAD drawings		/ 40		
SUBTOTAL		/ 70		With CAD drawings		/ 60			
CALCULATION		X 0.36		CALCULATION without CAD		X 0.63			
CALCULATION		X 0.84		CALCULATION with CAD		X 0.42			
Teacher's TOTAL		Teacher's TOTAL		Teacher's TOTAL					
TOTAL: A		/ 25		TOTAL: B		/ 50			
Moderated TOTAL		Moderated TOTAL		Moderated TOTAL					
TOTAL: A		/ 25		TOTAL: C		/ 25			
TEACHER'S TOTAL:		A + B + C =		/ 100		TEACHERS: Initial	MODERATOR: Initial		
MODERATED TOTAL:		A + B + C =		/ 100					

**11. DECLARATION OF AUTHENTICITY**

**DECLARATION OF AUTHENTICITY**

To be submitted with each learner's practical assessment task portfolio

NAME OF THE SCHOOL: .....

NAME OF LEARNER: .....  
(SURNAME AND INITIALS)

**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.**

\_\_\_\_\_  
**SIGNATURE OF LEARNER** DATE    /   /2019  
(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.**

\_\_\_\_\_  
**SIGNATURE OF TEACHER** DATE    /   /2019  
(DD/MM/YYYY)

