



basic education

Department:
Basic Education
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CIVIL TECHNOLOGY

GUIDELINES FOR PRACTICAL ASSESSMENT TASKS

2016

These guidelines consist of 24 pages and 2 annexures.

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SECTION 1

1. INTRODUCTION

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

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

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

SECTION 2

2. GUIDELINES FOR THE TEACHER

(These guidelines must be explained clearly to the learners.)

2.1 The structure of the PAT for Civil Technology

Practical assessment tasks are designed to develop and demonstrate a learner's ability to integrate a variety of skills in order to solve a problem. The PAT also uses the technological process to guide the learner on the steps that need to be followed to arrive at a solution for the problem at hand.

The PAT is based on investigations, simulations and the application of skills, knowledge and principles acquired by the learners that will cover the technological process in the built environment.

2.2 Management of the PAT

The PAT should commence in term 1, as this is a lengthy and drawn out process and **CANNOT** be left to the last minute.

- (a) All the components of the PAT (design portfolio, working drawings and model) should be completed and presented for assessment by the end of term 3 before the commencement of the preparatory examination to allow sufficient time for the external moderation.
- (b) During this phase, the teacher will do any final assessments that are outstanding. All learner portfolios, working drawings and models are kept safely until the moderation process is completed (both provincial and national moderation).

- (c) **The internal moderator/HOD must conduct moderation of the PAT throughout the year.**
- (d) It is imperative that the criteria are adhered to from the beginning, as this will form the basis for assessment.
- (e) Teachers cannot penalise learners on points that are not included in the initial criteria.
- (f) When learners are selected during moderation (face moderation), they may be required to showcase their skills and knowledge.

The communication of the design is a continuous process and the learner will make changes to this part of the portfolio continuously as the PAT progresses.

All teachers must design a pacesetter to indicate the completion dates for the different stages of the PAT. The teacher must manage this process to avoid crisis management and unnecessary stress nearer to the completion date of the PAT. This pacesetter must also be given to the learners.

The submission dates for the different sections of the PAT, as indicated in the pacesetter, should be given to learners in writing.

2.3 Administration of the PAT

The PAT should be based on real-life situations and completed under controlled conditions.

Teachers must set dates for the completion of the different phases of the PAT. In this manner learners can assess their progress. In instances where formal assessment tasks take place, it is the responsibility of the teacher to administer assessment tasks.

After studying the guidelines teachers must fully explain the requirements of the different stages of the PAT and the criteria, as indicated in the rubrics and mark schedules, to the learners. This will ensure that learners and teachers have a common understanding of the assessment tools and what is expected of the learners.

Teachers are requested to make copies of **SECTIONS 3 TO 5** of this document, **together with the assessment criteria of the PAT**, and hand it to the learners not later than the **first week in February**.

The product/model should not leave the classroom/workshop and must be kept in a safe place at all times when learners are not working on it.

2.4 Assessment and moderation of the PAT

The PAT for Grade 12 is externally set and moderated, but internally assessed by the teacher and moderated by the internal moderator/HOD.

2.5 Assessment

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

Both formal and informal assessment should be conducted on the different tasks that constitute the PAT. Informal assessment can be conducted by the learner himself or herself, by a peer group, or by the teacher. Formal assessment should always be conducted by the teacher and the results will be recorded.

The teacher must take into account the requirements of the assessment of all the components of the PAT and therefore plan the assessment programme of the PAT accordingly.

2.6 Moderation

During moderation of the PAT the design portfolio, working drawings and the model must be presented to the external moderator.

Where required the moderator should be able to call on the learner to explain the function and principles of operation and also request the learner to exhibit the skills acquired through the capability tasks for moderation purposes. The sequence of events of the technological process may also be requested from the learner.

SECTION 3**3. GUIDELINES FOR THE LEARNER**

Learner's name: _____

Time Allowed: 1st to 3rd term

3.1 Instructions to the learner

- This practical assessment task counts 25% of your final promotion mark.
- All work you produce must be your own effort.
- All sources used must be acknowledged.
- Use your discretion where dimensions and/or information have been excluded.
- Calculations should be clear and include units.
- Calculations should be rounded off to TWO digits.
- Drawings may be hand-drawn (use drawing instruments) or drawn on CAD.
NO photocopies or scanned files of drawings are allowed.
- Photographs and scanned photographs may be used and may be in colour or greyscale.
- SI units should be used.
- You are encouraged to use recycled materials to make the model.
- Changes during simulation of the product should be documented and included in the design portfolio.
- Your assignment and assessment instruments should be placed at the back of the design portfolio.
- The marking memorandum for the working drawings must be attached to your working drawings.
- Where available you may use electronic equipment, e.g. cellphones, cameras, digital cameras, etc. to document your progress.
- **The product/model should not leave the classroom/workshop and must be kept in a safe place at all times when you are not working on it.**

The practical assessment task (PAT) consists of a practical task to be completed over three terms. The PAT consists of a design portfolio, working drawings and a product/model.

Computer-aided drawings should be done under the supervision of the teacher.

NOTE: This year the PAT consists of ONE scenario that is COMPULSORY for all learners.

3.2 Task

Scenario:

A family of five wants to build a new house in a rural area where there are no sewerage connections and no existing facilities to service a conservancy tank. The house will consist of two bedrooms and an open-plan kitchen with a living and dining room and a garage. The size of the site is 23 000 mm x 19 000 mm and the area of the dwelling, including the garage, is 150 m².

As a draughtsman, you are requested to design a sewerage system for the dwelling consisting of a septic tank with a two-pipe system using TWO French drains.

Specifications for the house:

- Two bathrooms (one should be an en suite bathroom to the main bedroom). The en suite bathroom must have a water closet, wash basin and shower and the other bathroom must have a water closet, wash basin, shower and bath.
- Open-plan kitchen/living room/dining room
- Two bedrooms
- Single garage

Specifications for the septic tank:

- The septic tank must be big enough to maintain SIX people at all times.
- The waste-water must be directed to a separate French drain.
- The soil water must be directed to the septic tank with its own French drain.
- The septic tank must be built of bricks.

Instructions:

The learner should use his/her discretion where details have been omitted.

- 3.2.1 Develop and compile a design portfolio by following the technological process.

The following should be part of the design portfolio:

- Cover page
- Table of contents
- Declaration of authenticity
- Problem statement/Situation
- Design brief
- Research
 - Different layouts, sizes and construction details for French drains taking into consideration the soil conditions
 - Different layouts, sizes and construction details for septic tanks
- THREE possible solutions of site plans with the proposed dwelling and layout of the sewerage system
- The design and development of the chosen option of the site plan with the layout of the sewerage system indicated on the site plan:
 - Clearly show the layout of the septic tank with the two-pipe sewerage system and French drains that you are going to use
 - Sectional views of the septic tank and French drains
 - The dimensions and capacity of the septic tank (clearly show the formula and calculation for the volume of the septic tank)
 - The dimensions of the French drains
 - Explain the working principles of the septic tank
 - Explain why the waste-water must be directed to a separate French drain
 - Constructional detail of the septic tank and French drains
 - A schedule to show stages and time frames for the planning and making of the scale model of the septic tank with French drains
- A list of hand tools, power tools and equipment needed to build the septic tank
- A list of materials to build the septic tank
- The dimension paper (ANNEXURE B) for the calculation of the following materials for a septic tank constructed on a concrete base with bricks:
 - The volume of concrete needed for the floor slab and the reinforced concrete cover over the septic tank (use the dimension paper (ANNEXURE B) for the calculation of the materials)
 - The number of bricks required for building the septic tank (one-brick wall) with the half-brick partition wall
- Evaluation of the product
- Bibliography/List of references
- Evidence of research, e.g. letters received, quotation of costs, Internet research, etc.

3.2.2 Develop and draw the following using the marking memorandum for the drawings as a guide:

- A site plan to scale 1 : 200, showing the proposed building and clearly indicating the symbols/abbreviations of the sanitary fitments, as required, detailed sewerage layout up to and including the septic tank and French drains, position of the septic tank and French drains along with all other relevant detail (All other relevant details refer to all detail required on a site plan as stipulated in the *SANS Code of Practice for Building Drawings*.)
- A detailed longitudinal section drawing through the septic tank and French drains (Show all details, labels and dimensions.)

NOTE: Use the correct colour coding as prescribed by the *National Building Regulations/SANS 10 400* for building drawings, as indicated in the marking memoranda.

Use the criteria in the marking memorandum as a guideline for your drawings. All drawings should preferably be drawn on A3 drawing paper and be provided with dimensions, labels, notes and scales. Drawings should also comply with the minimum requirements as stipulated in the *SANS 10 400 (National Building Regulations)* and *SANS/SABS 0143, Code of Practice for Building Drawings*.

3.2.3 Build a scale model of the solution for your client. Show the following in the model:

- Part of the main sewer lines for the two-pipe system
- Septic tank (brick built)
- All access points from the sewer system into the septic tank and French drain
- French drain for soil water from the septic tank
- A separate French drain for waste-water

3.3 Tools and rubrics for assessment and moderation

The assessment tools below will be used to assess the different sections of your PAT.

Use these instruments to assist you with the completion of your PAT.

0 (zero) will be awarded if no evidence is available for any criteria.

3.3.1 Rubric for assessment of the design portfolio

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–29%	Level 0 0%
Presentation	Cover page	Six of the following done neatly: <ul style="list-style-type: none"> Name of school Name of learner Name of teacher Grade Year Appropriate title Appropriate illustration 	Five of the following done neatly: <ul style="list-style-type: none"> Name of school Name of learner Name of teacher Grade Year Appropriate title Appropriate illustration 	Four of the following done neatly: <ul style="list-style-type: none"> Name of school Name of learner Name of teacher Grade Year Appropriate title Appropriate illustration 	Template used. Fewer than four of the following done neatly: <ul style="list-style-type: none"> Name of school Name of learner Name of teacher Grade Year Appropriate title Appropriate illustration 	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Table of contents	All the following done correctly and neatly: <ul style="list-style-type: none"> Sections Subsections Page numbers Page numbers correspond with content 	Three of the following done correctly and neatly: <ul style="list-style-type: none"> Sections Subsections Page numbers Page numbers correspond with content 	Two of the following done correctly and neatly: <ul style="list-style-type: none"> Sections Subsections Page numbers Page numbers correspond with content 	One of the following done correctly and neatly: <ul style="list-style-type: none"> Sections Subsections Page numbers Page numbers correspond with content 	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Bibliography	Four of the following sources indicated correctly and neatly: <ul style="list-style-type: none"> Minimum of four books Magazines Pamphlets Personal interview Websites 	Three of the following sources indicated correctly and neatly: <ul style="list-style-type: none"> Minimum of three books Magazines Pamphlets Personal interview Websites 	Two of the following sources indicated correctly and neatly: <ul style="list-style-type: none"> Minimum of two books Magazines Pamphlets Personal interview Websites 	One of the following sources indicated correctly and neatly: <ul style="list-style-type: none"> Minimum of two books Magazines Pamphlets Personal interview Websites 	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–29%	Level 0 0%
Development of a design brief	Design brief	The design brief is EXTREMELY WELL formulated and defines the situation and need extremely well.	The design brief is WELL formulated and defines the situation and need well.	The design brief is VAGUELY formulated. The situation and need are not clearly defined.	The design brief is incomplete and/or VERY VAGUELY formulated.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Specifications and constraints	More than ADEQUATE detailed specifications and constraints are listed to meet the requirements of the design.	ADEQUATE specifications and constraints are listed to meet the requirements of the design.	An INCOMPLETE list of specifications and constraints are listed to meet the requirements of the design.	VERY FEW or NO specifications and constraints are listed.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
Investigation and analysis of information	Investigation	Information is taken from MORE than FOUR sources and is extremely relevant, logic and extremely neatly indicated.	Information is taken from FOUR different sources and is relevant, logic and neatly indicated.	Information is taken from THREE different sources. It is irrelevant and indicated untidily.	Information is taken from TWO different sources. It is extremely irrelevant and indicated untidily.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Analysis of information	Information is MORE than ADEQUATE and can be used extremely well to come up with an innovative design for the need/problem identified in the design brief.	Information is ADEQUATE and can be used well to solve the need/problem identified in the design brief.	Information is TOO LITTLE to solve the need/problem identified in the design brief.	VERY LITTLE INFORMATION which is irrelevant and serves no purpose in solving the need/problem identified in the design brief.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4	Level 3	Level 2	Level 1	Level 0
		80–100%	50–79%	30–49%	1–29%	0%
Generation of design ideas	Generation of possible solutions	Generates THREE or MORE excellent alternative, original and innovative design ideas to address the problem or need.	Generates THREE good alternative design ideas to address the problem or need.	Generates THREE alternative design ideas to address the problem or need. Design ideas show a lack of originality and innovation to address the problem or need.	TWO or fewer design ideas are generated. There is little difference between the different design ideas to address the problem or need.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Descriptive notes and dimensions	Outstandingly good and clearly descriptive notes and dimensions regarding the ideas are given.	Well-reasoned descriptive notes and dimensions regarding the ideas are given.	Not all notes and dimensions regarding the ideas are relevant and descriptive enough.	Very few or no notes and dimensions regarding the design ideas are given.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Motivation of preferred choice	Justifies the preferred option with clear reference to the design brief, specifications and constraints.	Well-reasoned choice of the final design with good reference to the design brief, specifications and constraints.	Limited reasoning for the final choice of the design with little reference to the design brief, specifications and constraints.	No or very limited motivation for the final choice of the design with little or no reference to the design brief, specifications and constraints.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–29%	Level 0 0%
Communication of ideas	Development of preferred solution	Final solution EXTREMELY WELL communicated. A very interesting solution which indicates the looks of the end product extremely well.	Final solution WELL communicated. A very interesting solution which indicates the looks of the end product well.	Final solution communicated SATISFACTORILY. An interesting solution which indicates the looks of the end product satisfactorily.	Final solution is communicated SCRAPPILY. A solution which does not resemble the end product or which is very difficult to interpret is developed.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Detailed sketches, descriptive notes and dimensions	More than enough sketches, descriptive notes and dimensions are developed to draw the working drawing.	Adequate sketches, descriptive notes and dimensions are developed to draw the working drawing.	Inadequate sketches, descriptive notes and dimensions are developed to draw the working drawing.	No or very few sketches, descriptive notes and dimensions are developed to draw the working drawing.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Working procedures and time frames	Main steps in the manufacturing are clearly set out with clear time frames providing excellent information to make the solution.	Main steps in the manufacturing are clearly set out with clear time frames providing adequate information to make the solution.	Main steps in the manufacturing are clearly set out with clear time frames providing inadequate information to make the solution.	Main steps in the manufacturing are not clearly set out with no clear time frames providing very little information to make the solution.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–29%	Level 0 0%
Tools and equipment to build the septic tank	List of equipment, hand and power tools	MORE than ADEQUATE hand and power tools are indicated correctly in an orderly and extremely neat manner under different headings.	ADEQUATE hand and power tools are indicated correctly in an orderly and neat manner under different headings.	FEWER than ADEQUATE hand and power tools are indicated satisfactorily in an orderly and neat manner under different headings.	EXTREMELY FEW hand and power tools are indicated in an untidy manner without different headings.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
List of materials	List of materials	MORE than ADEQUATE materials are indicated correctly in an orderly and extremely neat manner under different headings.	ADEQUATE materials are indicated correctly in an orderly and neat manner under different headings.	FEWER than ADEQUATE MATERIALS are indicated satisfactorily in an orderly and neat manner under different headings.	EXTREMELY FEW materials are indicated in an untidy manner without different headings.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
Calculation of quantities	Dimensions used	ALL the dimensions used to do the calculations are consistent with information provided.	A FEW of the dimensions used to do the calculations do not correlate with information provided.	MANY of the dimensions used to do the calculations do not correlate with information provided.	NONE of the dimensions used to do the calculations correlate with information provided.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Use of dimension paper	Excellent understanding of the use of the dimension paper method to calculate the number of bricks for the walls, the beam filling and the concrete is demonstrated.	Good understanding of the use of the dimension paper method to calculate the number of bricks for the walls, the beam filling and the concrete is demonstrated.	A reasonable understanding of the use of the dimension paper method to calculate the number of bricks for the walls, the beam filling and the concrete is demonstrated.	No understanding of the use of the dimension paper method to calculate the number of bricks for the walls, the beam filling and the concrete is demonstrated.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Correctness of answers and neatness of paper	All the answers are correct and are provided with units. Calculations are done extremely neatly.	The majority of the answers are correct and are provided with units. Calculations are done neatly.	A few of the answers are correct and are provided with units. Calculations are done reasonably neatly.	None of the answers are correct and no units are provided. Calculations shown are untidy.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–29%	Level 0 0%
Evaluation of product or model	Evaluation of product or model	Evaluate the product or model EXTREMELY COMPLETELY and comprehensively against ALL of the following: <ul style="list-style-type: none"> The design brief, specifications and constraints The user- and cost-effectiveness The procedures, techniques and processes to indicate possible improvements The appropriateness of the materials used 	Evaluate the product or model COMPLETELY and comprehensively against THREE of the following: <ul style="list-style-type: none"> The design brief, specifications and constraints The user- and cost-effectiveness The procedures, techniques and processes to indicate possible improvements The appropriateness of the materials used 	Evaluate the product or model SUPERFICIALLY against TWO of the following: <ul style="list-style-type: none"> The design brief, specifications and constraints The user- and cost-effectiveness The procedures, techniques and processes to indicate possible improvements The appropriateness of the materials used 	Shows LITTLE or NO evidence of an evaluation of the product or model against: <ul style="list-style-type: none"> The design brief, specifications and constraints The user- and cost-effectiveness The procedures, techniques and processes to indicate possible improvements The appropriateness of the materials used 	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
Adherence to deadlines	Adherence to deadlines	Design portfolio submitted BEFORE or ON due date.	Design portfolio submitted ONE to THREE days late.	Design portfolio submitted FOUR to SIX days late.	Design portfolio submitted later than SEVEN or MORE days.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

The assessment tools below will be used to assess the working drawings of your PAT.
Use these instruments as a checklist to assist you with the completion of your PAT.

3.3.2 Recording sheet for the design portfolio
Assess all the components indicated below.

Learner name: _____ **Grade: 12**_____

Place this recording sheet in the design portfolio of the learner.

TERM 1					
Assessment criteria	Design process	Submission date	Level	Level obtained	Total mark per section
Development of design brief	Design brief		4		
	Specifications and constraints		4		
Investigation and analysis of information	Investigation by means of different sources		4		
	Analysis of information		4		
Generation of design ideas	Generation of possible solutions		4		
	Descriptive notes and dimensions		4		
	Motivation of the preferred option		4		
Communication of ideas	Development of the preferred solution		4		
	Detailed sketches, descriptive notes and dimensions		4		
	Working procedures and timeframes		4		
List of tools, equipment and materials	List of equipment, hand and power tools		4		
	List of materials		4		
Calculation of quantities	Correct quantities as per design		4		
	Use of dimension paper		4		
	Correctness of answers and neatness		4		
Total for TERM 1 out of 60:					
Converted total for TERM 1 out of 25:					
TERM 3					
Evaluation of product	Evaluate the scale model by means of questions against the set criteria		4		
Presentation	Cover page		4		
	Table of content		4		
	Bibliography		4		
Adherence to deadlines	Final submission of design portfolio		4		
Total for TERM 3 out of 20:					
Grand total of design portfolio out of 80:					
Converted total out of 25:					

3.3.3 **Marking memorandum for the working drawings**
Assess all the components indicated below.

Learner's name: _____ **Grade: 12** _____

SCALE DRAWINGS	TERM 2 ASSESSMENT CRITERIA	MARK ALLOCATION			LEARNER MARK
		Good	Average	Poor/ Not done	
SITE PLAN	Boundary lines with dimensions	3	2	0–1	
	Vehicle access point	2	1	0	
	Building lines with dimensions	3	2	0–1	
	Position of proposed building on site	3 – 4	2	0–1	
	Site number	2	1	0	
	Adjacent site numbers	3	2	0–1	
	North point	3	2	0–1	
	Area of site and new building are indicated	3	2	0–1	
	Percentage of site covered	3	2	0–1	
	Symbols/Abbreviations of sanitary fixtures and sewerage layout showing the direction of flow, placement of main sewer lines and branch pipes, rodding eyes, inspection eyes, gulley and vent pipes	7–10	3–6	0–2	
	Position of septic tank with French drains	4–6	3–4	0–2	
	Accuracy of scale	3	2	0–1	
	Title and scale	2	1	0	
	Neatness and line quality	3	2	0–1	
SUBTOTAL		50			
LONGITUDINAL SECTION VIEW OF THE SEPTIC TANK AND FRENCH DRAIN	Concrete slab at bottom of septic tank drawn correctly and symbol for concrete indicated	3	2	0–1	
	Plastered walls for the two chambers drawn correctly showing openings in partition wall	4–5	2–3	0–1	
	Inlet and outlet pipes with T-pieces drawn correctly. Inlet pipe higher than the outlet pipe.	4–5	2–3	0–1	
	Concrete slab on top of septic tank showing manhole covers or access points drawn correctly and symbol for concrete indicated	4–5	2–3	0–1	
	Gas escape pipe drawn correctly	3	2	0–1	
	Correctness of French drain with filling, etc.	4–6	2–3	0–1	
	Inspection eye and PVC pipes	3	2	0–1	
	Correct dimensioning – three horizontal and three vertical	5–6	2–4	0–1	
	Accuracy of scale	3	2	0–1	
	Labels (at least six)	4–6	2–3	0–1	
	Title and scale	2	1	0	
	Neatness and line quality	3	2	0–1	
SUBTOTAL		50			
TOTAL		100 (/ 4 = 25)			
CONVERT TO		25			

3.3.4 Rubric for assessment of the final product/model

NOTE: 'Not presented' or 'Not attempted' will receive a 0 (zero) mark.

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–9%	Level 0 0%
Manufacturing and joining competency for:	Base (concrete slab), external walls of septic tank	Demonstrate an OUTSTANDINGLY HIGH LEVEL of skill and competence to manufacture these parts of the model correctly and to join them.	Demonstrate a HIGH LEVEL of skill and competence to manufacture these parts of the model correctly and to join them.	Demonstrate a SATISFACTORY LEVEL of skill and competence to manufacture these parts of the model correctly and to join them.	Demonstrate an UNACCEPTABLE LEVEL of skill and competence to manufacture these parts of the model correctly and to join them.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Partition wall with opening for sewage and concrete slab on top with manhole covers or access point to septic tank	Demonstrate an OUTSTANDINGLY HIGH LEVEL of skill and competence to manufacture these parts correctly and to join the parts of the supporting walls and concrete slab with manhole covers.	Demonstrate a HIGH LEVEL of skill and competence to manufacture these parts correctly and to join the parts of the supporting walls and concrete slab with manhole covers.	Demonstrate a SATISFACTORY LEVEL of skill and competence to manufacture these parts correctly and to join the parts of the supporting walls and concrete slab with manhole covers.	Demonstrate an UNACCEPTABLE LEVEL of skill and competence to manufacture these parts correctly and to join the parts of the supporting walls and concrete slab with manhole covers.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Inlet to septic tank and outlet pipe into French drain correctly positioned	Demonstrate an OUTSTANDINGLY HIGH LEVEL of skill and competence to manufacture and join the parts of the piping into and from the septic tank correctly.	Demonstrate a HIGH LEVEL of skill and competence to manufacture and join the parts of the piping into and from the septic tank correctly.	Demonstrate a SATISFACTORY LEVEL of skill and competence to manufacture and join the parts of the piping into and from the septic tank correctly.	Demonstrate an UNACCEPTABLE LEVEL of skill and competence to manufacture and join the parts of the septic tank correctly.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Outlet from septic tank into French drain and construction of French drain for soil water	Demonstrate an OUTSTANDINGLY HIGH LEVEL of skill and competence to manufacture and join the parts of the piping from the septic tank correctly and presentation of the French drain.	Demonstrate a HIGH LEVEL of skill and competence to manufacture and join the parts of the piping from the septic tank correctly and presentation of the French drain.	Demonstrate a SATISFACTORY LEVEL of skill and competence to manufacture and join the parts of the piping from the septic tank correctly and presentation of the French drain.	Demonstrate an UNACCEPTABLE LEVEL of skill and competence to manufacture and join the parts of the piping from the septic tank correctly and presentation of the French drain.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	French drain for waste-water with part of the main sewer pipe	Demonstrate an OUTSTANDINGLY HIGH LEVEL of skill and competence to manufacture and lay out the French drain correctly.	Demonstrate a HIGH LEVEL of skill and competence to manufacture and lay out the French drain correctly.	Demonstrate a SATISFACTORY LEVEL of skill and competence to manufacture and lay out the French drain correctly.	Demonstrate an UNACCEPTABLE LEVEL of skill and competence to manufacture and lay out the French drain correctly.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

CRITERIA		Level 4 80–100%	Level 3 50–79%	Level 2 30–49%	Level 1 1–9%	Level 0 0%
Modelling of product/model	Scale model	The scale model is an EXCEPTIONALLY GOOD representation of the real product and all parts are in VERY GOOD proportion.	The scale model is a GOOD representation of the real product and most of the parts are in GOOD proportion.	The scale model is a SATISFACTORY representation of the real product and most of the parts are in ACCEPTABLE proportion.	The scale model is a POOR representation of the real product and most of the parts are in POOR proportion.	Not attempted
	Level x 2	Level 4	Level 3	Level 2	Level 1	Level 0
	Appearance	Appearance is EXCEPTIONALLY impressive with NO easily observable defects.	Appearance is IMPRESSIVE with VERY MINOR easily observable defects.	Appearance is ACCEPTABLE with MINOR easily observable defects.	Appearance is UNACCEPTABLE with MANY easily observable defects in an incomplete model.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Craftsmanship	Craftsmanship of an OUTSTANDINGLY HIGH quality is observed.	Craftsmanship of a HIGH quality is observed.	Craftsmanship of a SATISFACTORY quality is observed.	Craftsmanship of a POOR quality is observed.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Overall impression	The surface finishing is of an OUTSTANDINGLY HIGH quality with NO obvious defects.	The surface finishing is of a HIGH quality with VERY FEW obvious defects.	The surface finishing is of a SATISFACTORY quality with EASILY observed defects.	The surface finishing is of a POOR quality with MANY easily observed defects.	Not attempted
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0
	Innovation and creativity	The modelled product shows OUTSTANDINGLY HIGH AND EXCEPTIONALLY IMPRESSIVE proof of innovation and creativity.	The modelled product shows GOOD AND IMPRESSIVE proof of innovation and creativity.	The modelled product shows LITTLE proof of innovation and creativity.	The modelled product shows NO or VERY LITTLE proof of innovation and creativity.	
	Level x 1	Level 4	Level 3	Level 2	Level 1	Level 0

3.4 Absence/Non-submission of task (What are the consequences?)

The absence of a practical assessment task will be dealt with in accordance with the regulations as stipulated in the *National Policy on Protocol for Assessment Grades R–12*, page 6, chapter 3, paragraphs 7 and 8.

The *National Protocol for Assessment Grades R–12*, chapter 3, paragraph 8, subsection (4) clearly states that the absence of a practical assessment task mark will result in the candidate registered for that particular subject, receiving an incomplete result.

3.5 Requirements for presentation

The following should be presented by the candidate for assessment and moderation:

- A complete design portfolio
- All scale drawings
- A completed model
- The candidate's name and class must be clearly indicated on all components of the PAT

The following document should be presented by the teacher for moderation:

- A composite mark sheet (one composite mark sheet comprising all candidates' names and marks for all aspects that were assessed)

3.6 Recommended timeframes for the completion of the PAT**Term 1:****Design portfolio**

- Problem statement/Situation
- Design brief
- Research
- Generate THREE ideas to address the problem/situation
- Develop the chosen idea/choice
- Planning – show stages and timeframes for the making and planning of the scale model of the garage and the rib and block floor
- List of tools and equipment needed to build the septic tank and French drain
- Calculation of the volume of concrete needed for the floor slab and the reinforced concrete cover over the septic tank
- Calculation of the number of bricks required to build the septic tank (one-brick wall) with the half-brick partition wall
- Use the dimension paper (ANNEXURE B) for the calculations.

Term 2:**Working drawings**

- All drawings as indicated on the marking memorandum.
- **NOTE:** Use the criteria in the marking memo for drawings as a guide when preparing your drawings.

Product/Model

- Manufacturing and assembling of parts

Design portfolio

- Changes which occur during the manufacturing of the product should be documented in the design portfolio.

Term 3:**Design portfolio**

- Cover page
- Table of contents
- Declaration of authenticity
- Evaluation of the product
- Bibliography/List of references

Product/model

- Manufacturing and final assembling of parts

3.7 Declaration of Authenticity

NAME OF THE SCHOOL:

NAME OF LEARNER:

NAME OF TEACHER:

**SCHOOL STAMP**

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

SIGNATURE OF LEARNER_____
DATE

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

SIGNATURE OF TEACHER_____
DATE

SECTION 4**4. LIST OF RESOURCES**

- 4.1 Textbooks
- 4.2 Pamphlets/Brochures
- 4.3 *SOUTH AFRICAN NATIONAL STANDARD – SANS 10400 (PART P – Drainage)*
- 4.4 Internet
- 4.5 Visit to industry where septic tanks are installed
- 4.6 Visit to hardware stores
- 4.7 Basic electrical machines for cutting and drilling material
- 4.8 Basic hand tools
- 4.9 Coarse aggregates
- 4.10 River sand
- 4.11 Cement
- 4.12 Water
- 4.13 PVC pipes
- 4.14 Pipe fittings
- 4.15 Hardware

The candidate is at liberty to use any material(s) that may assist him/her in the making of the model and he/she may use any method to obtain information for the design portfolio.

HOW TO COMPILE A BIBLIOGRAPHY/LIST OF REFERENCES**Common tips**

All sources have to be arranged alphabetically.

Note where the full stops (.), commas (,), colons (:), etc. are placed when writing down the source.

Titles are always underlined if handwritten and in italics/cursive when typed.

Book with one author:

Surname, Initials or Name. Year. Title. Place: Publisher.

Example: Barker, B.J. 1993. *The South African Book of House Plans*. Cape Town: Struik Publishers.

Magazine article:

Surname of journalist, Name or Initials. Year of publication. Heading, name of magazine: date, page references.

Example: Blockey, Z.P. 2014. 'Solving rib and block problems'. *Building Miracles*: 10 January 2014, pages 45–59.

Newspaper report:

Surname of journalist, Name or Initials. Year of publication. Newspaper heading, name of newspaper and date: page references.

Example: Meranti, A. 2014. 'New building material for houses'. *Housing Today*: 14 January 2014, page 4.

Personal interviews:

Surname of interviewee, Name or Initials. Job description, Name of institution. Subject of interview, date of interview, contact number, city or town.

Example: Isando, P. Civil Technology Teacher, Foundation Secondary School. *Compilation of a design portfolio*. 4 February 2015, 061 357 9631. Beam Filling Heights.

Website:

Title, Website <electronic address> [date downloaded].

Example: *Free house plans* <<http://ezinearticles.com>> [15 February 2015].

SECTION 5**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 learner's life skills and provides opportunities for learners to engage in their own learning.

ANNEXURE A: COMPOSITE MARK SHEET

ANNEXURE A: COMPTON SCALE MARK SHEET																																	
No.	NAME OF LEARNER	DESIGN PORTFOLIO (DP)											SCALE DRAWINGS				SCALE MODEL																
		Presentation	Development of design brief	Investigation and analysis of information	Generation of design ideas	Communication of ideas	List of tools, equipment and materials	Calculations of quantities	Evaluation of product or model	Adherence to deadlines	TOTAL: 80	TOTAL: 100%	TOTAL: 25	Site plan	Sectional view of septic tank & French drain	TOTAL: 100	TOTAL: 100%	TOTAL: 25	Concrete floor and external walls of septic tank	Partition wall with opening and concrete slab on top with manhole covers	Inlet piping to septic tank and outlet piping to French drain	Piping from septic tank and presentation of French drain for soil water	French drain for waste water & part of piping	Scale model	Appearance	Craftsmanship	Overall impression	Innovation and creativity	TOTAL: 44	TOTAL: 100%	TOTAL: 50	GRAND TOTAL: 100 (DP+WD+M)	
		12	8	8	12	12	8	12	4	4	80	100	25	50	50	100	100	25	4	4	4	4	4	8	4	4	4	4	44	100	50	100	
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TOTAL																																	
AVERAGE MARK																																	

Signature of Teacher

Date

Signature of Moderator

Date

SCHOOL STAMP

