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ENGINEERING GRAPHICS AND DESIGN **PRACTICAL ASSESSMENT TASK**
GRADE 10 **PAPER 3.1**
MARCH 2024 **TIME: 2 HOURS**
TOTAL: 34 marks

This question paper consists of **SIX** pages (excluding the **2024** grade 10, FS DoE, EGD, PAT guidelines (p 1 – 10) and the grade 10, EGD, PAT framework).
To be able to answer this question paper you must receive the following documents from your EGD teacher:
The **2024** grade 10, FS DoE, EGD, PAT guidelines (p 1 – 10)
The grade 10, EGD, PAT framework**.**
Clean answer sheets: **Two A4** double folio lined page (if no grade 10, EGD, PAT framework has been received from your teacher).
Two A3 drawing sheets.
Five A4 clean drawing sheets for preparing your cover page, a table of contents, a grid page and two for the possible freehand solutions.

INSTRUCTIONS AND INFORMATION

1. The Practical Assessment Task, Exam Paper 3, is compulsory for the final promotion mark for all candidates and contributes 25% (100 marks) towards a learner's final year mark.
2. The PAT (P3) exam is not a clinical exam as the teacher's intervention is constantly needed for the success of the PAT. It is therefore important for teachers to be present during PAT invigilation to answer content related questions raised by the learners.
3. This question paper consists of different phases that must be answered during each term.
4. The PAT scenarios are described in the **2024** grade 10, FS DoE, EGD, PAT guidelines (p 1 – 10). Teachers or learners may not deviate from this format.
5. All mechanical drawings must be answered in third angle-orthographic projection.
6. ALL the presentation requirements of the selected PAT, except for the research, must be completed at school, under the guidance and supervision of your teacher.
7. ALL freehand drawings and instrument drawings must be prepared in pencil.
8. Indicate the scale at each drawing.
9. All written answers can be answered on A4 ruled papers or A3 clean papers.
10. All drawings must be answered on A3 diagram sheets.
11. Marks will be allocated for one complete SANS mechanical name block, an ordinary informal name block and paper frame.
12. Not all prepared A3 pages will be used during this first phase of the exam, however all the pages must be stapled in numeric sequence, irrespective whether the phase was attempted or not.
13. Time management is essential to complete all the questions during this phase.
14. Print your name, surname (with a pen) as well as your grade on each page.
15. All answers must be drawn correct and accurate.
16. Plan each drawing carefully to show all the required information on the given diagram sheets.
17. The PAT will be assessed according to the assessment criteria and checklists, which are included in the PAT document.
18. Apply an extra column to the management plan. Name it "date completed" and monitor/self-assess your progress.
19. Untidy and incomplete work, as well as the late submission of different phases, will be penalised.
20. NO drawing, research or complete PAT's mark will be accepted if your name and surname are not written in ink on the drawing.

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Scenario 1:

Consult the **2024** grade 10, FS DoE, EGD, PAT guidelines (p 1 – 10) for more information.

Phase 1
Question 1:
THE DESIGN BRIEF

Use the given A4 ruled paper and answer the following questions:

Analyse the given scenario and formulate a design brief in two different paragraphs:

1.1 The first paragraph must, in your own words, include a brief background of **what must be designed**. [2]

1.2 The second paragraph must, in your own words, give a clear overview of **your role in the project**. A short description of the technological design process of which you will follow, resulting a detailed solution can be described in more detail (see the headings on p 6 for more detail on the technological process). [2]

1.3 Identify and list **all** the **specification** of this year's mechanical PAT. [2]

1.4 List a minimum of **three** (mechanical PAT) **constraints** for what you will experience during the rollout of this project. This includes areas described in the PAT which is unknown to your EGD content knowledge (Regulations to apply when making a tool, welding the tool as a unit, etc.). [2]

1.5 Draw a table with at least four columns and about ten rows indicating the following features of a **management plan:**

The headings in the first row for each column will be the following:

Number	The activities for completion (see below)	Expected date of completion (see below)	Date completed (Continuous self-evaluation [5] and meeting the deadlines [5])
1			
2			

Phase 1	
MECHANICAL PAT	
	(7 March 2024)
1	Completion of the design brief, specifications, constraints, and management plan.
2	Completion of the paper preparation
	(21 Marh - 2 April 2024):
3	Completion of the research (Submit after the March holidays).
4	Completion of bibliography.
	(15 – 19 April 2024):

5	Complete freehand drawings
6	Selecting the best solution
Phase 2	
(24 May 2024)	
7	The parts drawn as a unit.
8	An isometric drawing.
Phase 3	
(24 May 2024)	
9	Submit the final PAT project

[2]

Use the mechanical assessment criteria and checklists shown below to ensure your compliance to all the specifications before you submit your design brief.

MECCHANICAL PAT DESIGN BRIEF – ASSESSMENT CRITERIA		
1.1	1st paragraph: background and comprehensive description of what has to be designed	2
1.2	2nd paragraph: your role and description of complete design process you are going to follow	2
1.3	A list of ALL the specifications of the valve	2
1.4	A list of at least THREE constraints of the valve	2
1.5	A management plan with target dates for ALL the presentation requirements	2
	TOTAL	10

SUBTOTAL 10

Question 2:
DRAWING PAPER PREPARATION

Use the given A4 drawing sheets and complete the following:

2.1 If your teacher did not give you the grade 10, EGD, PAT framework or a grid (graph) paper, you will have to use **one** of the **A4 drawing sheets** and draw grid blocks of 5 mm x 5 mm over the complete A4 drawing sheet. This will indicate your method of drawing an accurate freehand drawing. Write your initials, surname (written in pen), and your grade to the right bottom of the drawing grid page. {10}

2.2 If your teacher did not give you the grade 10, EGD, PAT framework, use **two, A4** drawing sheets (**mechanical PAT**), draw only your initials, surname (written in pen), and grade to the right bottom of the page. No frame or name block is required on this page. Two of these drawing sheets will serve as freehand drawing sheets. [1]

2.3 On **one, A3** drawing sheet (**mechanical PAT**), draw a frame, 10 mm from the edge of the drawing sheet. Draw on this drawing sheets a rectangular title block of 75 mm x 20 mm. Supply this drawing sheets with your initials, surname (written in pen), and grade between 4 mm guidelines. This drawing sheet will be used to draw an isometric drawing on it [2]

2.4 On the **remaining A3** drawing sheet draw besides the frame of 10 mm from the edge of the paper, a complete mechanical title panel. See below annexure A for a SANS 10111 mechanical title panel. Copy the appropriate title panel. Write all the required information with a pencil but write your initials and surname (with a pen) on this drawing sheet. Use this page to draw the three orthographic views.[5]

2.5 If you never received your grade 10, EGD, PAT framework, use **one, A4** clean drawing sheet and complete your front cover page by adding the following to it:

- the school's name,
- your initials and surname, written with a pen,
- your grade and class group,
- your teacher's initials and surname,
- a copy of **your own isometric drawing (mechanical PAT)** must be added on this cover page after completion of the latter views. [1]

2.6 If no grade 10, EGD, PAT framework was received, use the **fifth A4** paper and draw a table with 16 rows and 3 columns on it. Write the word "TABLE OF CONTENTS" in the top row. For each column use the heading, **number**, **topic** and **page** respectively. Write the numbers 1 – 14 vertically downwards in the number column. Use the list of topics for the PAT (see the last page of this document for mechanical PATs) and complete the topic column. The page numbers can only be completed after the PAT has been compiled and binned, just before the submission of the final PAT document on 24 May. (see below first six of possible 16 rows as an example).

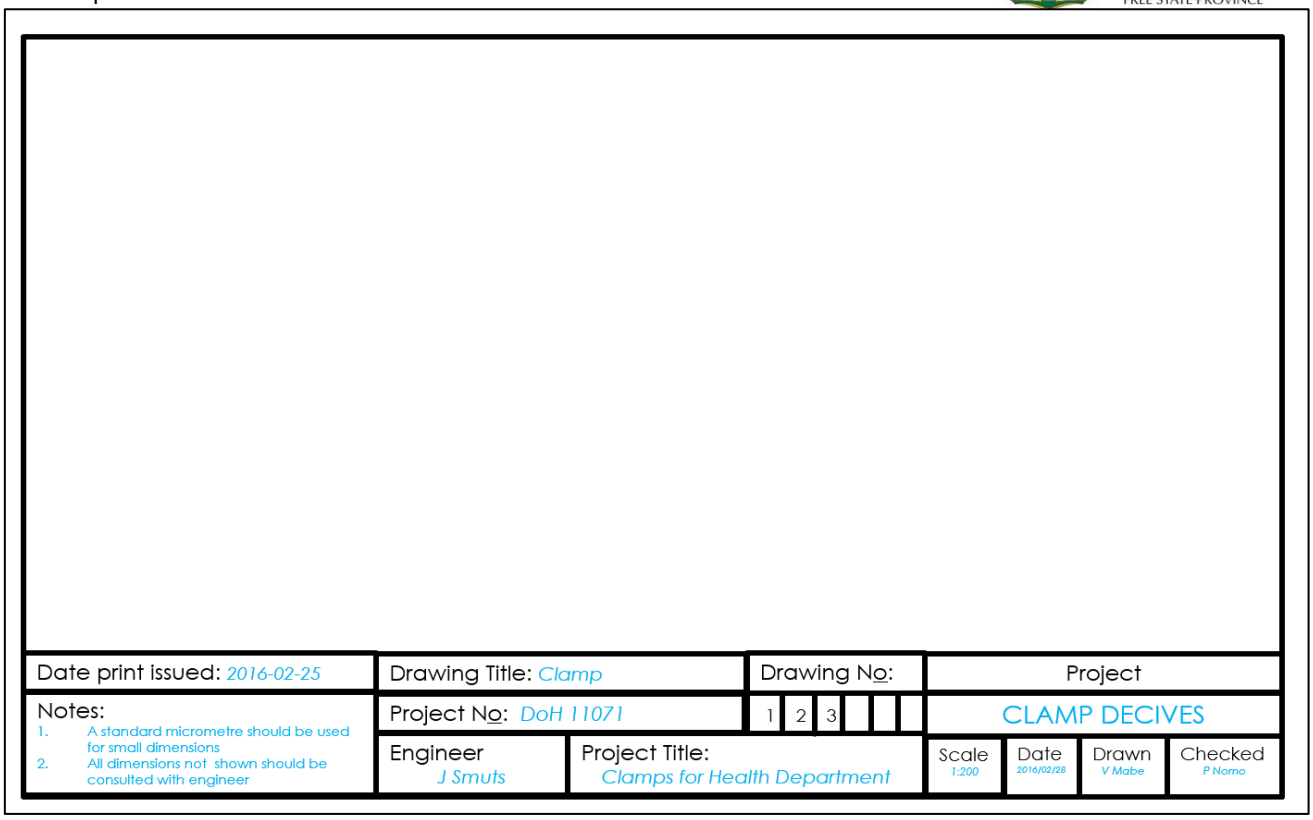
TABLE OF CONTENT		
Number	**Topic**	**Page**
1	Cover Page	
2	Table of content	
3	Summative Assessment Sheet	

[1]
{10}

Annexure A: SANS 10 111 mechanical title panel

A mechanical title panel extend always horizontal on the page from left to right.
The title panel supply the following information:

- project title.
- subject of the drawing.
- the scale of the drawing.
- the date of drawing.
- the project numbers.
- the drawing number and revisions.
- the code references if appropriate.
- the name of the (engineer) draughtsman (your name and surname written in pen).
- the address and telephone number.
- the firm name of the engineering company.
- the names or initials of the persons who checked the drawing.



Use the mechanical assessment criteria and checklists shown below to ensure that your drawing sheet preparation comply to all the specifications before you submit your research.

MECHANICAL PAT DRAWING SHEET PREPATATION – ASSESSMENT CRITERIA	
Appropriately sized drawing sheets	1
Borders on all the drawing sheets of all the working drawings	2
Complete EGD, NSC, Paper 2 Question 1 compliant MECHANICAL TITLE BLOCK on ONE drawing sheet	7
TOTAL	10

SUBTOTAL 10

Question 3:
ASSESSMENT CRITERIA AND CHECKLIST

3.1 Use your management plan of the mechanical PAT and complete all the information at the column named "Date completed". {2 of 10 marks}

Question 4:
SUMMATIVE ASSESSMENT SHEET

4.1 Use the SUMMATIVE ASSESSMENT SHEET of this year's PAT and complete the required information with a pen. [1]

DECLARATION OF AUTHENTICITY

4.2 Use the DECLARATION OF AUTHENTICITY of this year's PAT and complete the required information with a pen. [1]

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Submission of this answer sheets (exam P3)

Submit your answer set in the following (temporary) order.

1. A temporary cover page (the isometric drawing has yet to be added).
2. A temporary, unfinished table of contents (the page numbers still need to be added).
3. The summative assessment sheet.
4. The completed declaration of authenticity.
5. ALL the design assignment with the management plan's "Date Completed column" not finally completed.
6. **Two, A4** pages per topic, clean pages that will be used for research.
7. The bibliography of the research.
8. The **first of two**, clean **A4** pages for the freehand drawings of the possible design solutions.
9. The **second of two**, clean **A4** pages for the freehand drawings of the possible design solutions.
10. The documents design to choose the best solution.
11. The complete mechanical SANS 10111 name block for the orthographic drawing (mechanical PAT) (prepared, but not yet completed).
12. The isometric drawing (mechanical PAT) (prepared but not yet completed).
13. The assessment criteria with the checklist filled in.
14. The gridded page for drawing the two freehand sketches.

TOTAL 34