education
Department of Education
FREE STATE PROVINCE

ENGINEERING GRAPHICS AND DESIGN **PRACTICAL ASSESSMENT TASK**
GRADE 10 **PAPER 3.3**
APRIL 2024 **TIME: 3 HOURS**
TOTAL: 30 marks

This question paper consists of **three** pages.
If the freehand sketches are not completed, you will not be able to complete the rest of the PAT assignments. With no completed PAT, the implication will be no exam admission for the promotion exam in November 2024.
In order to answer this question paper you must use the following documents:

1. The **2024** grade 10 FS DoE PAT guidelines (p 1 – 10).
2. The grade 10, EGD, PAT framework.
3. A **double folio A4 lined page** (or an A3 clean drawing sheet if the grade 10, EGD, PAT framework is not made available).
4. The **two clean A4 drawing sheets** on which only your initials, surname and grade are indicated at the bottom right of the page (already completed during question paper 3.1).
5. The **grid A4 drawing sheet** with 5 x 5 mm grided squares, on which your initials, surname and grade are indicated at the bottom right of the page (already completed during question paper 3.1).
6. The **research** (already completed during paper 3.2).

INSTRUCTIONS AND INFORMATION

1. This part of the paper will be completed during the second term during class periods, under the supervision of the IGO teacher.
2. ALL freehand drawings and instrument drawings must be prepared in pencil.
3. Show the scale with each drawing.
4. Not all prepared A3 pages will be used during the first phase of the examination. All written and prepared sheets must be stapled again in numbered order and handed in at the end of each phase, regardless of whether the drawing sheets were used during this phase or not.
5. Time planning is essential to complete all the questions during this phase.
6. All answers must be answered correctly and accurately.
7. Carefully plan each drawing to show complete information on the specific diagram sheet.
8. The PAT will be assessed according to the assessment criteria and a checklist, which is included in this PAT document.
9. Untidy and incomplete work, as well as the late submission of the various phases, will be penalised.
10. NO drawing, research or complete PAT's mark will be accepted if your name and surname are not written in ink on it.

Phase 1
Question 7:
TWO FREE HAND DRAWINGS

7 Use the prepared A4 grid page and the two A4 clean drawing sheets (with no frame and only the initials, surname (written in pen) and grade written to the right bottom). Read through the given scenario (see the **2024** grade 10 FS DoE PAT guidelines (p 1 – 10) to prepare two detailed freehand design solutions.

The **mechanical freehand drawing** must show the following:

- With a pencil, prepare neat detailed freehand drawings of TWO possible design solutions of the proposed main parts, or a combination of parts of the tool.

- The set of freehand presentations of the tool must show the following:
  - orthographic views
  - isometric drawing(s)
  - dimension
  - labels
  - explanatory notes
  - the correct presentation of all features
  - a short explanation of what the tool is compiled of.

All the drawings must comply with the SANS 10111 guidelines.

Use the civil assessment criteria and checklist below to ensure that you meet all the specifications before submitting the design brief.

MECHANICAL PAT FREEHAND DESIGN SOLUTION (1 & 2) – ASSESSMENT CRITERIA	
Drawn freehand	2
Correct presentation in correlation with the assignment	2
Relative size/proportion of features to each other.	2
Supply the necessary labels (1) & notes (1).	2
Supply the necessary dimensions	2
A freehand Isometric drawing per solution is shown for more clarity	2
Functionality of the new design (practicability for the purpose)	3
Subtotal = 15 ÷ 1,5 = TOTAL	10

(SUBTOTAL 2 x 10)

The mechanical PAT drawings must provide clear evidence that a high level of competency has been attained. Include the grid/graph paper used, together with the freehand sketches as evidence to the method of free hand drawing {20}

Question 8:
SELECTING THE BEST FREE HAND DRAWING.

8.1 On a separate A4 (ruled page or clean A3 drawing sheet if the grade 10, EGD, PAT framework was not provided), evaluate and compare the TWO freehand solutions by **creating** a **table** of at least 7 rows x 8 columns.

The headings of the table should consist of the following:

SELECTING THE BEST FREE HAND DRAWING							
		SOLUTION 1			**SOLUTION 2**		
Nu	**CRITERIA**	**POSITIVE**	**NEGATIVE**	**SCORE**	**POSITIVE**	**NEGATIVE**	**SCORE**
1							
2							
3							

[2]

- **List four different criteria (mechanical PAT)** to compare the different solutions. [2]
- Develop a simple **rating scale** to determine a point for each criterion at each freehand sketch's solution. The table below (see also your PAT's assessment criteria) can serve as a good example for a rating scale.

RATING SCALE	
SCORE	**DESCRIPTION**
0	Meet less than 30% of the requirements (very poor).
1	Comply between 30% - 60% of requirements (average).
2	Meets between 60% - 100% of all the requirements (very good).

[2]

- For each criterion, **compare** and **discuss** the **positive** and **negative** aspects of freehand sketch's solution one, with the positive and negative aspects of freehand sketch's solution two. Calculate the total for each criterion to determine the best solution. [2]
- **Write** a short **summary** with sufficient reasons why you chose the best solution. The summary should also include **whether** any **late changes** have been made to the chosen freehand solution **or not**. [2]

Use the below assessment criteria and checklist for the civil PAT (or mechanical PAT) to ensure that you meet all the specifications before submitting the design brief.

SELECTING THE BEST FREEHAND SOLUTION – ASSESSMENT CRITERIA	
An appropriate table created for the selection process	1
Select FOUR different criteria to evaluate and compare the two PAT freehand options.	2
Discuss (reason) the advantages and disadvantages of each criterion.	2
Implement values in the given rating scale to evaluate three options	2
Total the two options to determine the best option	1
Comprehensive summary with reasons for selected solution (including possible late changes)	2
TOTAL	10

{10}

Submit ALL your answer sheets for exam paper 3

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: 30**