higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

DRAWING OFFICE PROCEDURES AND TECHNIQUES

(First Paper)

NQF LEVEL 2

(12050702)

22 November 2019 (Y-Paper)
13:00–16:00

This question paper consists of 5 pages.

Copyright reserved

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Make drawings, sketches and diagrams in pencil.
5. Freehand drawings, sketches and/or diagrams must be neat, reasonably large, in proportion and fully labelled.
6. Rule off across the page after each completed question.
7. ALL abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS (SABS) codes.
8. Write neatly and legibly.

Copyright reserved

QUESTION 1

1.1 Name the TWO directions into which graphic representations of an idea, process or real object evolved. (2)

1.2 List FOUR forms of technical drawings. (4)

1.3 Give SIX higher-level positions that draughtspersons who acquire additional skills and experience may advance to. (6 × 2) (12)

1.4 Who appointed Gaspard Monge to investigate the use of intelligible drawings of military equipment to manufacture it in more than one factory? (2)

[20]

QUESTION 2: DRAWING OFFICE STANDARDS AND SPECIFICATIONS

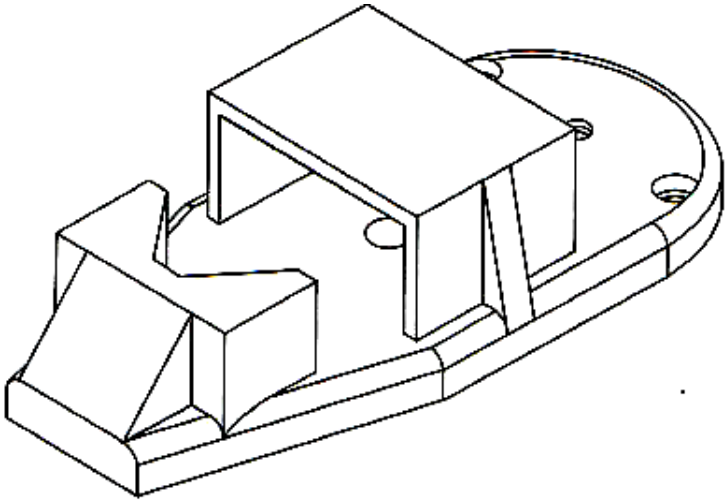
2.1 List THREE methods to sharpen a pencil. (3)

2.2 How will you keep a pencil sharp to have a uniform line width? (1)

2.3 Name THREE important elements to consider when drawing the standard legend of a working drawing. (3)

2.4 Explain why it is important to draw a standard legend of a working drawing. (2)

2.5 Make a freehand drawing, in good proportion, of the jig shown below.



(8)

[17]

QUESTION 3: DRAWING OFFICE LAYOUT AND EQUIPMENT

3.1 Name THREE factors to consider in a typical drawing-office layout. (3 × 2) (6)

3.2 List FOUR types of numbering systems used to file drawings. (4)

3.3 Name FOUR elements that should be on a drawing issue sheet. (4)

3.4 Give FOUR methodology details that should be in a technical report. (4)
[18]

QUESTION 4: PRINCIPALS OF VISUALISATION AND PERCEPTION

4.1 A client wants a freehand drawing of a machine block which will be used as a welding jig. The block is 135 mm long, 125 mm wide and 6 mm thick. A series of holes must be positioned on the face of the block as follows:

- A 75 mm diameter hole must be marked off in the centre of the block.
- FOUR 22 mm holes, set 25 mm from each corner, must be marked off on the right-hand side of the block.

Make ONE freehand drawing of the machine block and insert ALL dimensions on the drawing. (6)

4.2 A client wants to build a bathroom. He gives the following dimensions:

Floor plan of the bathroom:	2 240 mm × 2 440 mm
Side of 2 240 mm:	A bath tub of 1 800 mm × 700 mm
Side of 2 440 mm:	A door of 900 mm × 2 100 mm on one side
	A window 1 500 mm × 1 200 mm and WHB on the opposite side

4.2.1 Make ONE freehand drawing of the floor plan based on the dimensions given by the client. (8)

4.2.2 The building contractor asked you to make the following changes to the drawing:

(a) Reduce the size of the window to 900 mm × 700 mm because a 1 500 × 1 200 mm window is too large for a bathroom, particularly when the wall in which it must be fitted is only 2 000 mm long. This leaves only 250 mm of wall either side of the window. Besides, the window overlaps the bath by 450 mm.

Reduce the window size so that it ends before the bath starts.

(b) Based on the current drawing, the basin is going to be installed under the window.

Move the basin to a place where a cupboard with a mirror can be installed above the basin. (8)

Copyright reserved

4.3 Checkers make comments on detail drawings before issuing the drawings to a workshop for manufacturing. These drawings are normally stamped with the words CHECK-PRINT. NOT FOR MANUFACTURING.

Give TWO reasons why drawings are checked. (2)
[24]

QUESTION 5: UNITS OF MEASUREMENT

5.1 Name the TWO units in which temperature is measured. (2)

5.2 Which unit is used to measure the amount of light intensity? (1)

5.3 Which unit is used to measure torque? (1)

5.4 What is measured in watts? (1)

5.5 Complete the following sentence by writing only the missing word or words next to the question number (5.5.1–5.5.2) in the ANSWER BOOK.

Flow rate is measured by either its (5.5.1) … or (5.5.2) …. (2 × 1) (2)

5.6 Add the following angles:

5.6.1 50° 41' and 17° 18'

5.6.2 20° 59' and 6° 30'

5.6.3 124° 56' and 23° 53'

(3 × 2) (6)

5.7 Write each of the following numerals in scientific notation:

5.7.1 0,01

5.7.2 0,0000012

5.7.3 0,0000000432

5.7.4 0,0000000000000001

(4 × 2) (8)
[21]

TOTAL: 100

Copyright reserved