

2010/11/531



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

T662(E)(N18)T  
**NOVEMBER 2010**

**NATIONAL CERTIFICATE**

**ENGINEERING DRAWING N2**

(8090272)

**18 November (X-Paper)**  
**09:00 – 13:00**

**REQUIREMENTS: A2 DRAWING SHEET**

**Drawing instruments may be used.**

**Calculators may be used.**

**This question paper consists of 4 pages and 3 diagram sheets.**



**DEPARTMENT OF HIGHER EDUCATION AND TRAINING**  
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ENGINEERING DRAWING N2  
TIME: 4 HOURS  
MARKS: 100

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers correctly according to the numbering system used in this question paper.
  4. ALL drawings must be done neatly using drawing instruments.
  5. ALL drawings must conform to the latest SANS code 0111 of 1990.
  6. ALL work you do not want to be marked, must be clearly crossed out.
  7. Full marks = 100%
  8. Write neatly and legibly.
- 

PTO

**QUESTION 1: WELDING SYMBOLS, COMPUTER-AIDED DRAUGHTING, FASTENERS AND ELECTRICAL FITTINGS**

- 1.1 Name the FOUR main parts of a welding symbol. (4)
  - 1.2 Name FOUR types of electrical fittings used in the electrical industry. (4)
  - 1.3 Name FOUR points as advantages of using computer-aided draughting programs. (4)
  - 1.4 Name FOUR different types of locking devices. (4)
- [16]**

**QUESTION 2: SCREWTHREADS**

FIGURE 1 DIAGRAM SHEET 1 (attached), shows a front view of an M60 Nut 70 mm thick.

Draw to scale 1:1 a sectional front view of the nut.

Provide the nut with a right hand internal square thread with a pitch of 14 mm according to the conventional representation.

**[10]**

**QUESTION 3: FIRST-ANGLE ORTHOGRAPHIC PROJECTION**

FIGURE 2 DIAGRAM SHEET 1 (attached), shows an outside front view and an outside left view of a joint piece.

Draw to scale 1:1 and in first-angle orthographic projection the following views:

- 3.1 A full sectional front view on cutting plane B-B (9)
  - 3.2 A full sectional left view on cutting plane A-A (9)
  - 3.3 Draw the following title and scale beneath the layout:  
JOINT PIECE  
SCALE 1:1 (2)
  - 3.4 Draw the symbol for first-angle orthographic projection beneath the layout. (1)
- [21]**

PTO

**QUESTION 4: ISOMETRIC VIEW**

FIGURE 3 DIAGRAM SHEET 2 (attached), shows two views of a work piece in first angle orthographic projection.

Do NOT redraw the given views but draw to scale 1:1 on isometric view of the work piece

POINT A must be the lowest point.

No hidden detail required.

[14]

**QUESTION 5: INTERPENETRATION**

FIGURE 4 DIAGRAM SHEET 2 (attached), shows two views of a cylinder penetrated by a triangle with equal legs at right angles without the interpenetration lines.

Redraw the TWO views in first-angle orthographic projection and show the following:

5.1 The interpenetration curve on the left view in scale 1:1

5.2 Show ALL the construction lines on the drawing

[12]

**QUESTION 6: THIRD-ANGLE ORTOGRAPHIC PROJECTION AND MACHINING SYMBOLS**

FIGURE 5 DIAGRAM SHEET 3 (attached), shows a casting of a slip-plate. Draw to scale 1:1 in third-angle orthographic projection the following views of the slip plate:

- |     |   |      |
|-----|---|------|
| 6.1 | An outside front view   | (6)  |
| 6.2 | A full sectional top view   | (7)  |
| 6.3 | A full sectional right view   | (7)  |
| 6.4 | Add any EIGHT dimensions  | (4)  |
| 6.5 | Add the title and scale beneath the layout  | (2)  |
| 6.6 | Insert the third-angle orthographic projection symbol in a space beneath the layout | (1)  |
|     |   | [27] |

**TOTAL: 100**



## DIAGRAM SHEET 1

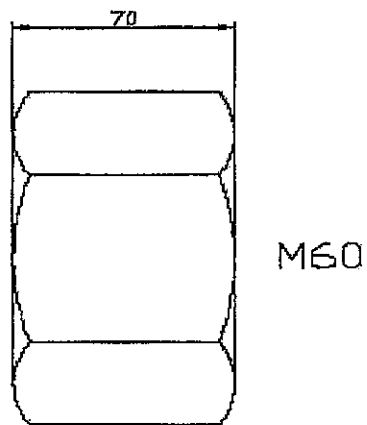
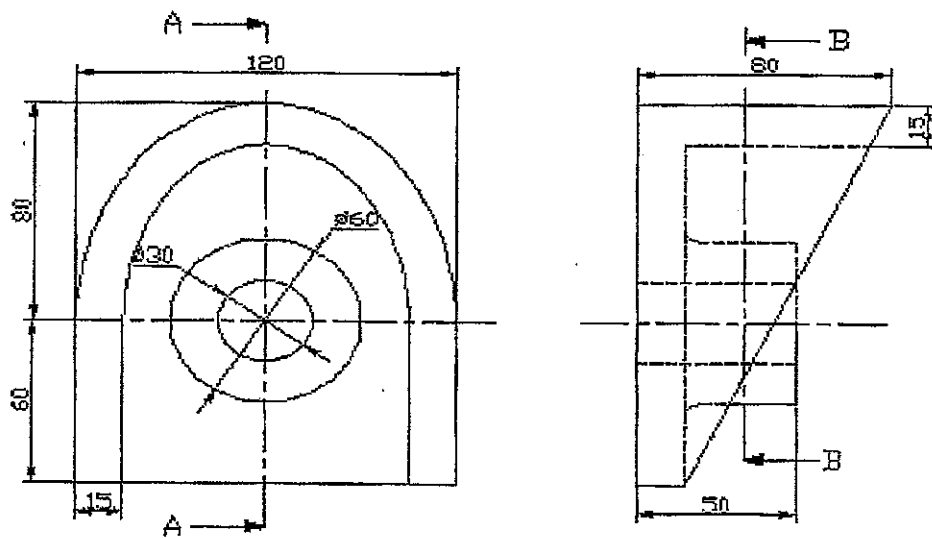


FIGURE 1



SCALE 1:1

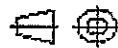
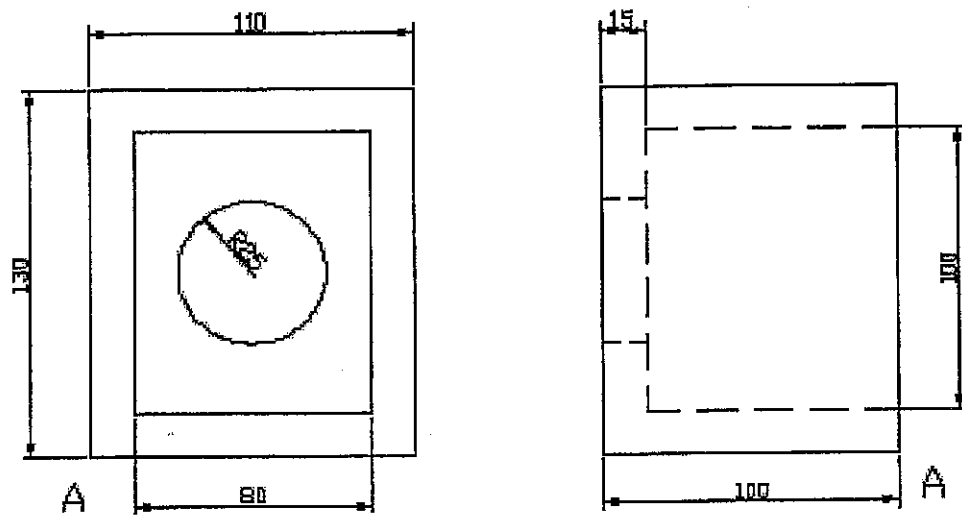


FIGURE 2

DIAGRAM SHEET 2



SCALE 1:1

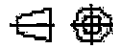
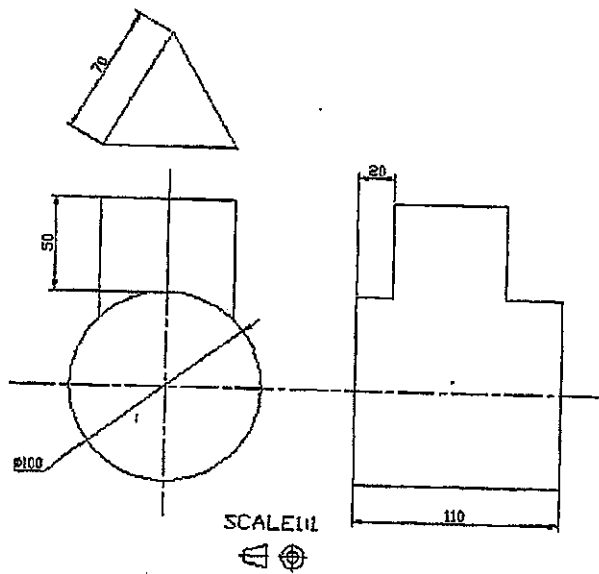


FIGURE 3



SCALE 1:1



FIGURE 4



## DIAGRAM SHEET 3

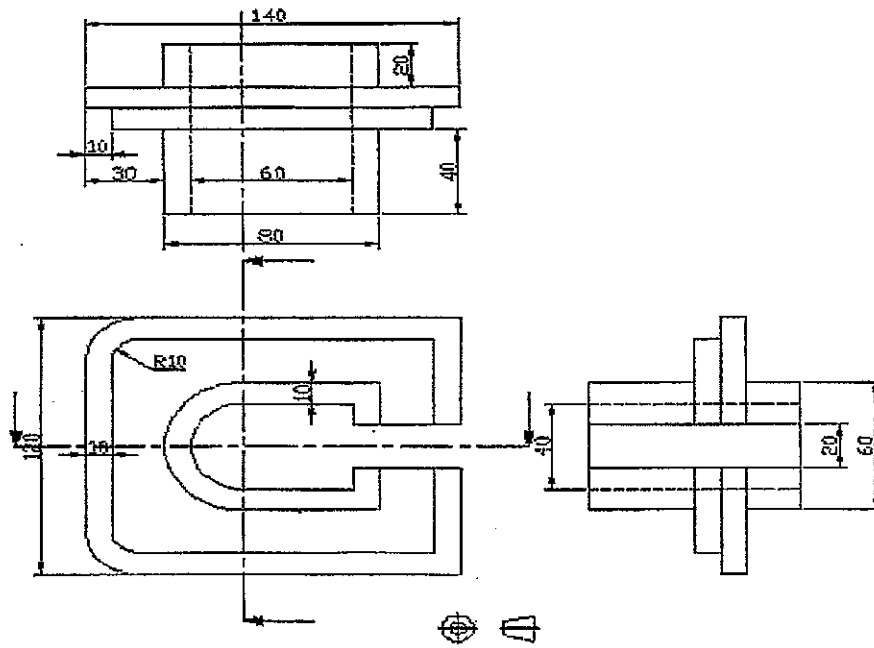


FIGURE 5

