



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1350(E)(M29)T

NATIONAL CERTIFICATE

PLATING AND STRUCTURAL STEEL DRAWING N3

(8090113)

29 March 2019 (X-Paper)

09:00–13:00

REQUIREMENTS: ONE A2 drawing sheet

Nonprogrammable calculators and drawing instruments may be used.

This question paper consists of 5 pages, 2 diagram sheets and 1 answer sheet.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
PLATING AND STRUCTURAL STEEL DRAWING N3
TIME: 4 HOURS
MARKS: 100

NOTE: If you answer more than the required number of questions only the required number will be marked. Clearly cross out ALL work you do NOT want to be marked.

INSTRUCTIONS AND INFORMATION

1. Answer any FOUR questions.
 2. Read ALL the questions carefully.
 3. Number the answers according to the numbering system used in this question paper.
 4. Show ALL construction lines.
 5. Do TWO questions on the front and TWO questions on the reverse side of the DRAWING SHEET.
 6. Add a title and scale to each answer.
 7. Work neatly.
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QUESTION 1

FIGURE 1, DIAGRAM SHEET 1 (attached), shows the front and top views of a duct with rectangular openings at 90° to one another which will be used in an extractor.

- 1.1 Draw, to scale 1:10, the given views.  (2)
- 1.2 Calculate the true lengths of the bend lines on the DRAWING SHEET and write only the answers in the table on the ANSWER SHEET (attached). (12)
- 1.3 Use the true lengths calculated in QUESTION 1.2 to develop the pattern of the rectangular duct. (5)

NOTE: NO marks will be awarded for true lengths taken from the drawing to scale.

Mark allocation for drawing-office practice:

Line work	1
Title and scale	1
Accuracy	2
Neatness	2

(6)
[25]



QUESTION 2

FIGURE 2, DIAGRAM SHEET 1 (attached), shows the front and top views of an oblique cylindrical hopper used as an attachment on a dispensing machine.

- 2.1 Draw, to scale 1:1, the TWO views. (4)
- 2.2 Develop the pattern for the hopper. (14)

Mark allocation for drawing-office practice:

Accuracy	2
Neatness	1
Title and scale	1
Line work	3

(7)
[25]



QUESTION 3

FIGURE 3, DIAGRAM SHEET 1 (attached), shows a junction between a dome and a right cone used in an exhaust system.

- 3.1 Draw, to scale 1:2, the given view. (2)
- 3.2 Draw half of the top view.  (2)
- 3.3 Determine the line of interpenetration. (7)
- 3.4 Develop the pattern of the cone. (7)

Mark allocation for drawing-office practice:

Accuracy	2
Neatness	1
Title and Scale	1
Line work	3

(7)
[25]

**QUESTION 4**

FIGURE 4, DIAGRAM SHEET 2 (attached), shows two views of a hopper used as a model at a TVET college.

- 4.1 Draw, to scale 1:5, the given views of the hopper. (4)
- 4.2 Develop the shape of the plate required for the hopper. (10)
- 4.3 Develop a template for the kink. (5)

Mark allocation for drawing-office practice:

Line work	2
Title and Scale	1
Accuracy	2
Neatness	1

(6)
[25]



QUESTION 5

FIGURE 5, DIAGRAM SHEET 2 (attached), shows the front view of a welded steel connection that consists of the following parts:

Item 1	200 × 200 rolled steel joint (RSJ) (tapered flange 20 mm to 10 mm), web 10 mm thick	1 off
Item 2	200 × 85 rolled steel channel (RSC) (tapered flange 20 mm to 10 mm), web (10 mm thick)	1 off
Item 3	20 mm thick shaped gusset plates.	2 off

Draw, to scale 1:5, the following in first-angle orthographic projection:



- 5.1 The front view (4)
- 5.2 The left view (6)
- 5.3 The top view (6)
- 5.4 Print the title STEEL CONNECTION centred beneath the views and insert the projection symbol. (2)

Mark allocation for drawing-office practice:

Accuracy	2
Neatness	1
Title and Scale	1
Line work	3



(7)
[25]

TOTAL: 100

DIAGRAM SHEET 1

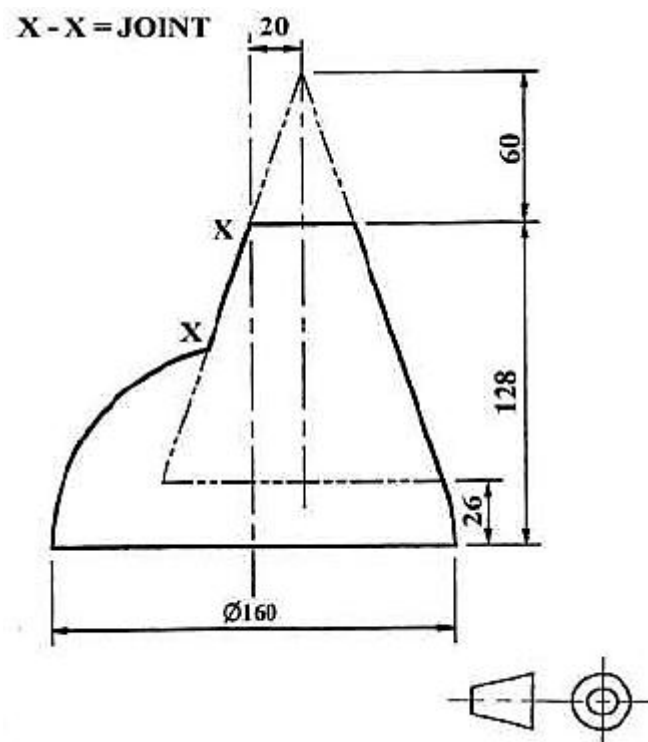
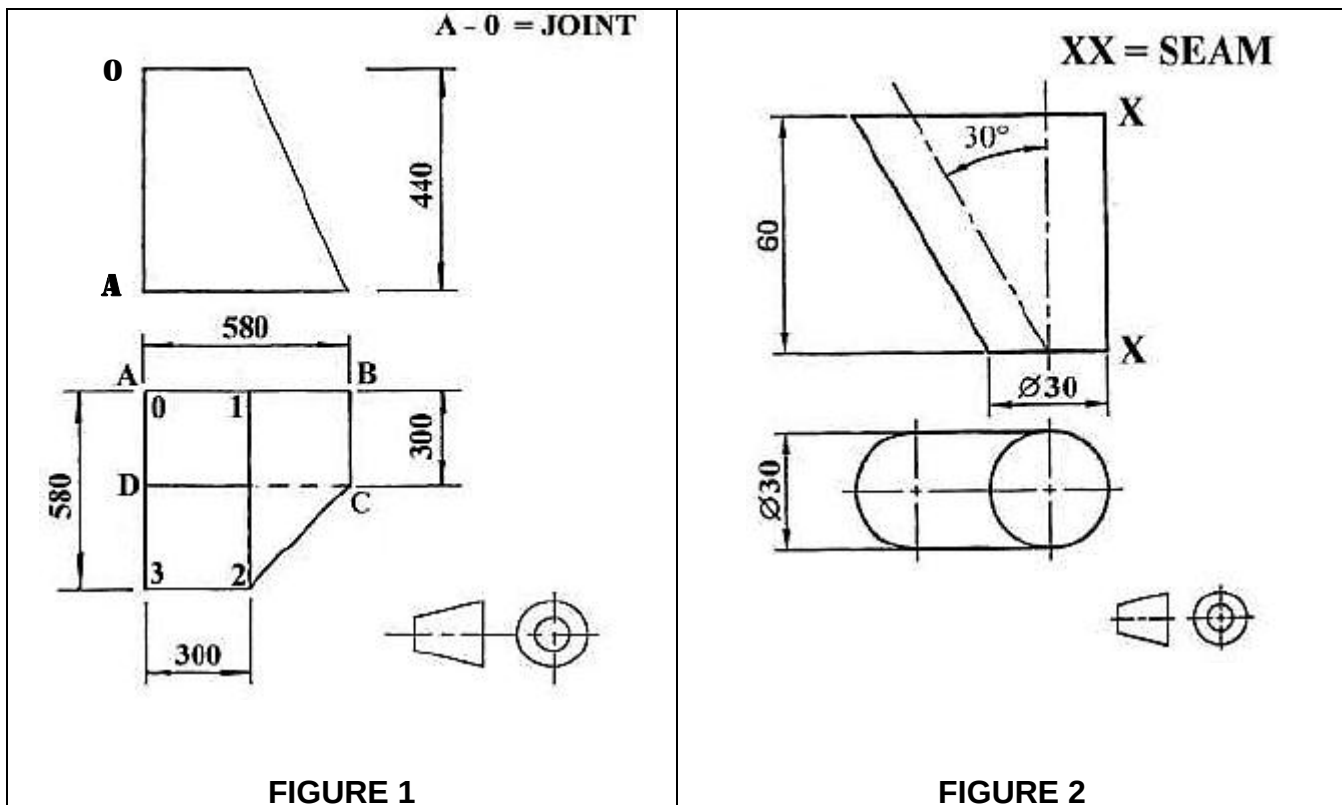


DIAGRAM SHEET 2

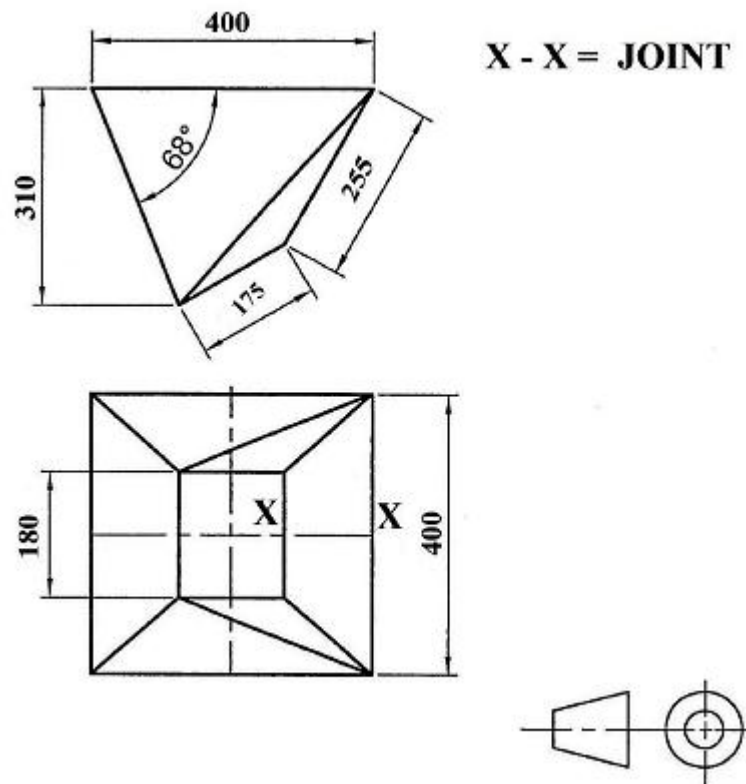


FIGURE 4

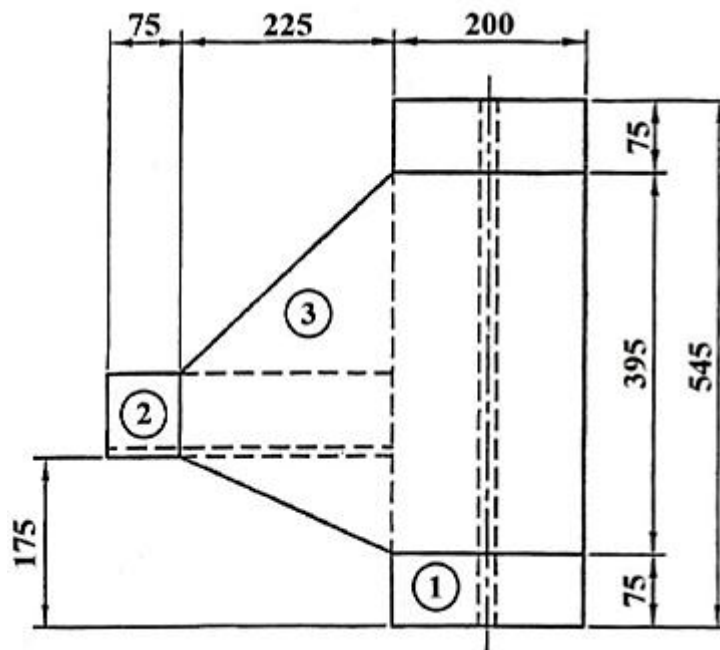


FIGURE 5

ANSWER SHEET

EXAMINATION NUMBER:

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QUESTION 1

Submit this table together with the DRAWING SHEET. Calculations must be done on the DRAWING SHEET. Write only the answers in the table below.

LINE	CALCULATED TRUE LENGTH VALUES	
A0		1
A1		1
B1		1
C1		2
C2		2
C3		2
D3		2
D0		1
TOTAL:		12