higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

PLATING AND STRUCTURAL STEEL DRAWING N4

(8090124)

28 November 2022 (X-paper)
09:00–13:00

REQUIREMENTS: ONE A2 drawing sheet

Drawing instruments and nonprogrammable calculators may be used.

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

262Q1E2228

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
PLATING AND STRUCTURAL STEEL DRAWING N4
TIME: 4 HOURS
MARKS: 100

NOTE: If you answer more than the required number of questions, only the required number of questions will be marked. All work you do not want to be marked, must be clearly crossed out.

INSTRUCTIONS AND INFORMATION

1. Answer only 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 the calculations on the question paper.
5. Insert dimensions, title and scale on each drawing.
6. Draw on both sides of the drawing paper.
7. Only ONE drawing sheet may be used.
8. Write neatly and legibly.

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QUESTION 1

FIGURE 1, DIAGRAM SHEET 1, shows the front view of a two-point conical nozzle forming a T-piece with a right pipe. The conical nozzle will be used to blow hot air into a drying tunnel in a spray-painting workshop.

Draw the following views to scale 1:2:

1.1 The given view.

1.2 The pattern of point 'A' of the nozzle. The joint of the pattern is shown at X-X.

1.3 The pattern of the right pipe. The joint of the pattern is shown at Y-Y.

The completed drawing must clearly indicate all the construction lines. The following title and scale must be printed centrally below the finished drawing.

TWO-POINT CONICAL NOZZLE
SCALE 1:2

[25]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 1, shows the front view and left view of a small rectangle-to-square transformer. The transformer will be used to fit the adjustable feet for the legs of a package handling conveyor in a warehouse.

Do the following:

2.1 Draw the given views. (Not to scale)

2.2 Calculate the true lengths to develop the pattern of the transformer. Write the true lengths on the answer sheet provided.

2.3 Use the calculated true lengths and develop to scale 1:1 the pattern for the transformer. The joint of the pattern is shown at E0.

NOTE: Marks will NOT be given for lengths taken from the drawing to scale.

The completed drawing must clearly indicate all the construction lines. The following title and scale must be printed centrally below the finished drawing.

RECTANGLE-TO-SQUARE TRANSFORMER
SCALE 1:1

[25]

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QUESTION 3

FIGURE 3, DIAGRAM SHEET 1, shows the front and top view of an off-centre connection between a main pipe and a branch pipe. The off-centre will be used in the piping of a regional water supply dam.

Draw the following views to scale 1:10:

3.1 The given views.

3.2 An auxiliary view of the branch piece.

3.3 The pattern of the branch pipe. The joint of the pattern must be at X-X.

The completed drawing must clearly indicate all the construction lines. The following title and scale must be printed centrally below the finished drawing.

OFF-CENTRE CONNECTION
SCALE 1:10

[25]

QUESTION 4

FIGURE 4, DIAGRAM SHEET 2, shows the front and top view of a straight-back junction piece. The junction piece will be use as part of the ducting of an air conditioning plant of a multi-storey building.

Draw the following views to scale 1:10:

4.1 The given views.

4.2 The half pattern of the junction piece. The joints of the junction are shown at X-X and Y-Y.

The completed drawing must clearly indicate all the construction lines. The following title and scale must be printed centrally below the finished drawing.

STRAIGHT-BACK JUNCTION PIECE
SCALE 1:10

[25]

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QUESTION 5

FIGURE 5, DIAGRAM SHEET 2, shows the front view of an oblique conical connection to a right conical end piece, without the line of intersection. The oblique conical connection to the conical end, will be fitted to a tank in a brewery.

Draw the following views to scale 1:10:

5.1 The given view.

5.2 The FULL top view without the line of interpenetration.

5.3 The line of interpenetration in the front view.

5.4 The line of interpenetration in the top view.

5.5 The pattern of the oblique cone. The joint of the oblique is shown at X-X.

The completed drawing must clearly indicate all the construction lines. The following title and scale must be printed centrally below the finished drawing.

OBLIQUE CONICAL CONNECTION
SCALE 1:10

[25]

TOTAL: 100

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ANSWER SHEET

EXAMINATION NUMBER: | | | | | | | | | | | | | |

This table must be handed in together with the drawing paper.

The calculations must be done on the drawing paper.

CALCULATE	**TRUE LENGTH**	**%**
A2 & D3		2
1-2; 2-3; 3-4 &4-1		1
D2 & A3		2
DC & AB		1
D1 & A4		2
4-0 & 1-0		1
C1 & B4		2
B0 & C0		2
CE & BE		1
E-0		1
TOTAL		**15**

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DIAGRAM SHEET 1

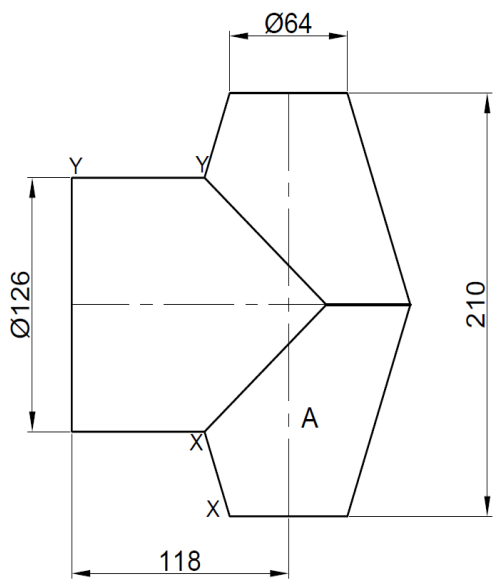


FIGURE 1

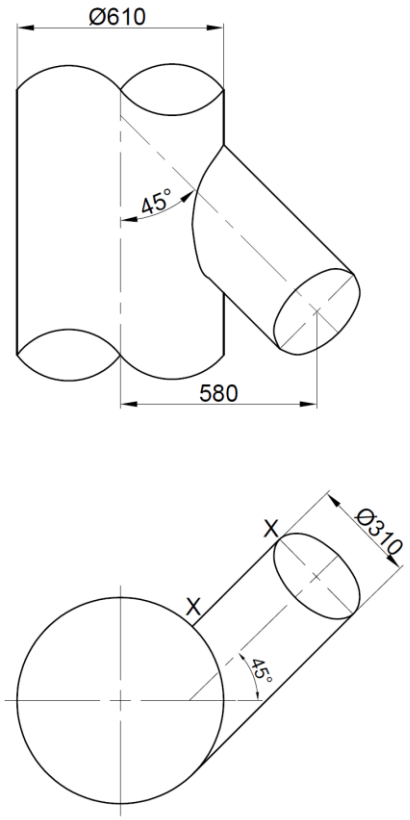


FIGURE 3

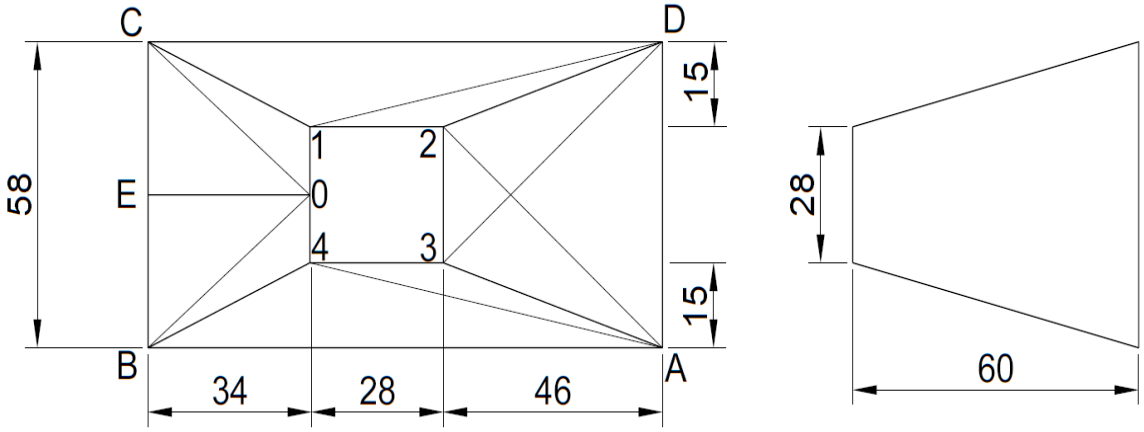


FIGURE 2

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DIAGRAM SHEET 2

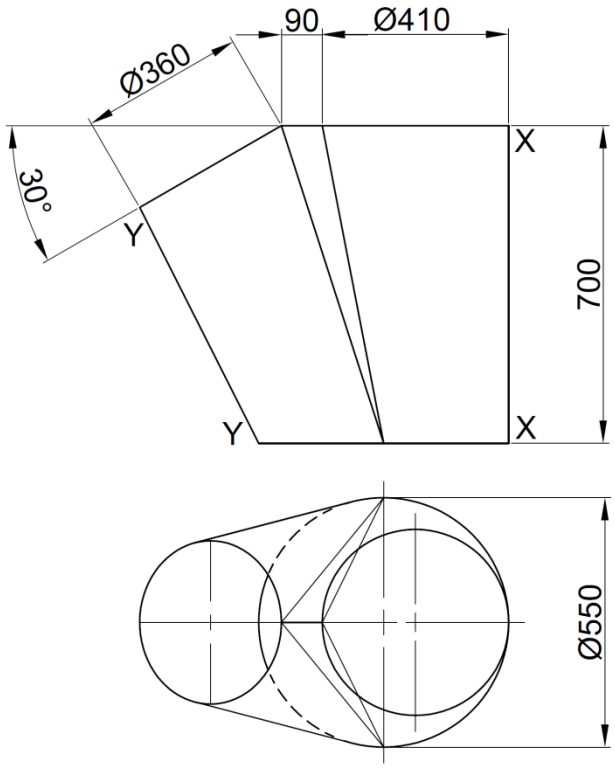


FIGURE 4

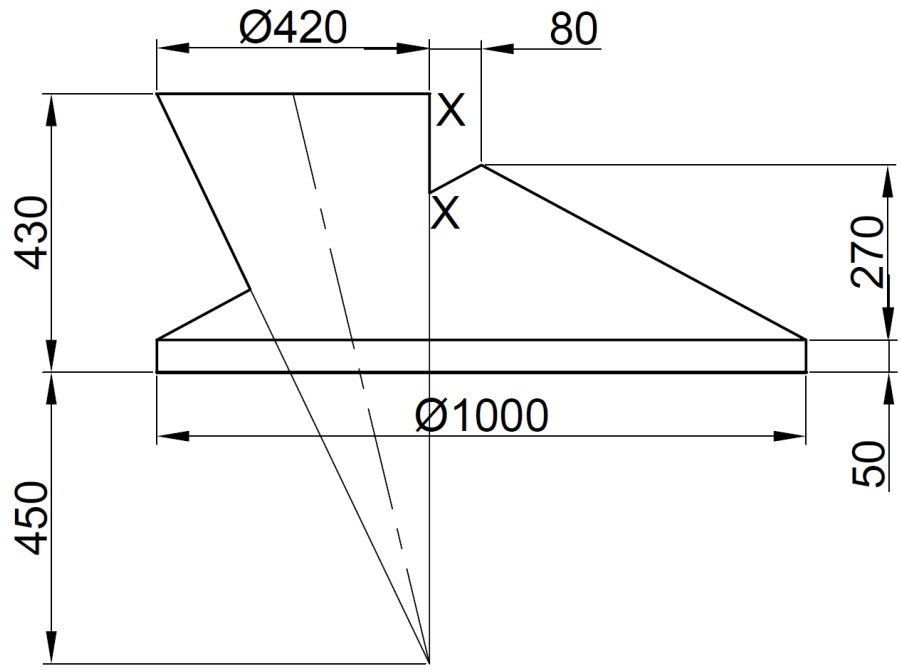


FIGURE 5

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