PAST EXAM PAPER & MEMO N3

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This question paper consists of 5 pages and 2 diagram sheets.
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 QUESTION ONE and any THREE other questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Do TWO questions on the front and TWO questions on the reverse side of the drawing sheet.
5. ALL the construction lines must be shown.
6. Add a title and scale to each answer.
7. Untidy work will be penalised.
8. Work neatly.
QUESTION 1 (COMPULSARY)

FIGURE 1, DIAGRAM SHEET 1 (attached) shows two views of a square-to-round transition piece.
(NOTE: No marks will be awarded for lengths taken from a drawing to scale.)

1.1 Draw the given views. \( \text{ (2) } \)
1.2 Calculate the true lengths (show ALL calculations). \( \text{ (10) } \)
1.3 Use the information from QUESTION 1.2 above and develop HALF a pattern of the transition piece. \( \text{ (6) } \)

SCALE 1 : 1

Mark allocation for drawing office practice for the above questions:

- Line work \( \text{ (3) } \)
- Accuracy \( \text{ (2) } \)
- Balance/Layout and neatness \( \text{ (1) } \)
- Title and scale \( \text{ (1) } \)

[25]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 1 represents a front elevation and a top view of a sloping chute.

Answer the questions below:

2.1 Draw the top view. \( \text{ (1) } \)
2.2 Construct the front view. \( \text{ (5) } \)
2.3 Develop the throat pattern B showing the true length. \( \text{ (4) } \)
2.4 Develop the heel pattern C showing the true length. \( \text{ (4) } \)
2.5 Develop the pattern for the bottom plate A. \( \text{ (4) } \)

SCALE 1 : 10

Mark allocation:

- Line work \( \text{ (3) } \)
- Accuracy \( \text{ (2) } \)
- Neatness \( \text{ (1) } \)
- Title and scale \( \text{ (1) } \)

[25]

AND/OR
QUESTION 3

Three views of an oblique T-piece are shown in FIGURE 3, DIAGRAM SHEET 1.

3.1 Draw the given views of the oblique T-piece. (3)
3.2 Determine the interpenetration line by construction. (5)
3.3 Develop the shape of the branch pipe. (5)
3.4 Develop the shape of the hole in the main pipe. (5)

SCALE 1 : 5

Mark allocation for drawing office practice for the above questions:

Line work (3)
Accuracy (2)
Balance/Layout and neatness (1)
Title and scale (1)

QUESTION 4

Three views of a hopper are shown in FIGURE 4, DIAGRAM SHEET 2 (attached).

4.1 Draw 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. (4)

SCALE 1 : 10

Mark allocation for drawing office practice for the above questions:

Line work (3)
Accuracy (2)
Balance/Layout and neatness (1)
Title and scale (1)

AND/OR
QUESTION 5

An intersection between a cylindrical pipe and a DOME is shown FIGURE 5, DIAGRAM SHEET 2.

5.1 Draw the given views. (3)

5.2 Determine the line of interpenetration by construction. (8)

5.2 Develop the pattern of the cylindrical pipe. (6)

SCALE 1 : 10

Mark allocation for drawing office practice for the above questions:

Line work e (3)
Accuracy (3)
Balance/Layout and neatness (1)
Title and scale (1)

[25]

TOTAL: 100
Diagram Sheet 2
Diagramvel 2

FIG. 4

X-X = JOINT/LAS

FIG. 5

X-X = JOINT/LAS
MARKING GUIDELINE

NATIONAL CERTIFICATE

APRIL EXAMINATION

PLATING AND STRUCTURAL STEEL DRAWING N3

23 MARCH 2016

This marking guideline consists of 6 pages.

NOTE:- The memorandum cannot be used as a marking tool as the drawings are not to scale. It is correct but not to scale.
QUESTION 1

CALCULATIONS

\[ 1 - 2 = \frac{\pi \times 72}{12} = 18.849 \rightarrow \]

\[ 1x = \sqrt{(Ox - R)^2 + h^2} \]

\[ 1x = \sqrt{(45 - 36)^2 + 50^2} \]

\[ 1x = 50.804 \rightarrow \]

\[ 1a = \sqrt{(1x)^2 + (ax)^2 + h^2} \]

\[ 1a = \sqrt{(9^2 + 45^2) + 50^2} \]

\[ 1a = 67.868 \rightarrow \]

\[ 2a = \sqrt{(ax - R \cos 30^\circ)^2 + (ax - R \sin 30^\circ)^2 + h^2} \]

\[ 2a = \sqrt{(45 - 36 \cos 30^\circ)^2 + (45 - 36 \sin 30^\circ)^2 + 50^2} \]

\[ 2a = \sqrt{13823^2 + 27^2} + 50^2 \]

\[ 21a = 58.481 \rightarrow \]

MARK ALLOCATION

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MEMORANDUM

QUESTION 2

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SPiral Blade

Scale 1:10

GIVEN VIEWS

TRUE LENGTHS

DEVELOPMENT

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MEMORANDUM

QUESTION 3

OBLIQUE T-JUNCTION
SCALE 1: 5

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Please turn over
MEMORANDUM
QUESTION 5

GIVEN VIEWS

DEVELOPMENT

CYLINDRICAL PIPE INTO
DOME CONNECTION
SCALE 1: 10

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