PAST EXAM PAPER & MEMO N3

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T530(E)(M29)T
APRIL EXAMINATION
NATIONAL CERTIFICATE
ENGINEERING DRAWING N3
(8090283)
29 March 2016 (X-Paper)
9:00–13:00

REQUIREMENTS: One A2 drawing paper

This question paper consists of 10 pages.
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. Use BOTH sides of the drawing sheet.

5. A 15 mm border must be drawn on both sides of the drawing sheet.

6. ALL drawing work including candidate information must be done in pencil.

7. A radius curve stencil may be used to draw smaller arcs.

8. Unspecified radii must be R3.

9. A balanced layout is very important and candidates will be penalised for poor planning.

10. ALL drawing work must conform to the latest SANS 10111 Code of Practice for Engineering Drawing.

MARK ALLOCATION

<table>
<thead>
<tr>
<th>QUESTION 1: FREEHAND DRAWING</th>
<th>[10]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctness</td>
<td>5</td>
</tr>
<tr>
<td>Line work</td>
<td>2</td>
</tr>
<tr>
<td>Accuracy and proportion</td>
<td>2</td>
</tr>
<tr>
<td>Layout and neatness</td>
<td>1</td>
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<table>
<thead>
<tr>
<th>QUESTION 2: SECTIONAL DRAWING</th>
<th>[25]</th>
</tr>
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<tbody>
<tr>
<td>2.1 Correctness – Full-sectional front view</td>
<td>5</td>
</tr>
<tr>
<td>2.2 Correctness – Full-sectional top view</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Correctness – Full-sectional left view</td>
<td>5</td>
</tr>
<tr>
<td>Line work – 1 mark per view</td>
<td>3</td>
</tr>
<tr>
<td>Accuracy – 1 mark per view</td>
<td>3</td>
</tr>
<tr>
<td>Layout and neatness</td>
<td>2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>QUESTION 3: ASSEMBLY DRAWING</th>
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</tr>
</thead>
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<tr>
<td>3.1 Correctness</td>
<td>16</td>
</tr>
<tr>
<td>Line work</td>
<td>5</td>
</tr>
<tr>
<td>Accuracy</td>
<td>5</td>
</tr>
<tr>
<td>3.2 Title and scale</td>
<td>2</td>
</tr>
<tr>
<td>Layout and neatness</td>
<td>2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>QUESTION 4: DETAILED DRAWING</th>
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</tr>
</thead>
<tbody>
<tr>
<td>4.1.1 Correctness – Full-sectional front view (Item 1)</td>
<td>3</td>
</tr>
<tr>
<td>4.2.1 Correctness – Full-sectional front view (Item 2)</td>
<td>5</td>
</tr>
<tr>
<td>4.2.2 Correctness – Full-sectional left view (Item 2)</td>
<td>4</td>
</tr>
<tr>
<td>Line work – 1 mark per view</td>
<td>3</td>
</tr>
<tr>
<td>Accuracy – 1 mark per view</td>
<td>3</td>
</tr>
<tr>
<td>Layout and neatness</td>
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</tbody>
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<table>
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<tr>
<th>QUESTION 5: ISOMETRIC PROJECTION</th>
<th>[15]</th>
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</thead>
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<tr>
<td>Correctness</td>
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<tr>
<td>Line work</td>
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<tr>
<td>Accuracy</td>
<td>2</td>
</tr>
<tr>
<td>Scale</td>
<td>2</td>
</tr>
<tr>
<td>Layout and neatness</td>
<td>1</td>
</tr>
</tbody>
</table>

TOTAL 100
QUESTION 1: FREEHAND DRAWING

FIGURE 1 shows a full-sectional front view of a bracket. Make a freehand drawing of the given view, approximately full size.
QUESTION 2: SECTIONAL DRAWING

FIGURE 2 shows two primary views of a component.

Draw, to scale 1 : 1 and in THIRD-ANGLE ORTHOGRAPHIC PROJECTION, the following views of the component:

2.1 A full-sectional front view with the top view in section (9)
2.2 A full-sectional top view (9)
2.3 A full-sectional right view on cutting plane X-X (7)

No hidden detail is necessary.
QUESTION 3: ASSEMBLY DRAWING

FIGURE 3 shows the primary views of the components of a swivel head.

The complete list of parts is as follows:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Swivel head</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Bush</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Shaft</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Collar</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Pin</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Washer</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>M16 Hexagonal nut (not shown)</td>
<td>1</td>
</tr>
</tbody>
</table>

3.1 Draw as an assembly drawing, to scale 1 : 1, a full-sectional front view of the assembly.  

3.2 Insert item numbers only on the assembly drawing.
QUESTION 4: DETAILED DRAWING

FIGURE 4 shows two primary views of a roller-jack assembly.

Draw, to scale 1 : 1 and in FIRST-ANGLE ORTHOGRAPHIC PROJECTION, detailed drawings of the following items:

4.1 The roller-jack body (Item 1) showing the following view:
   A full-sectional front view
   (6)

4.2 The roller cradle (Item 2) showing the following views:
   4.2.1 A full-sectional front view
   (8)
   4.2.2 A full-sectional left view
   (6)

NO hidden detail is necessary.
QUESTION 5: ISOMETRIC PROJECTION

FIGURE 5 shows the primary views of a component.

Construct an isometric scale and then draw an isometric projection of the component.

NO hidden detail is necessary.
MARKING GUIDELINE

NATIONAL CERTIFICATE
APRIL EXAMINATION
ENGINEERING DRAWING N3

29 MARCH 2016

This marking guideline consists of 6 pages.
QUESTION 1

= 1 MARK

= ½ MARK

MARK ALLOCATION
CORRECTNESS 5%
LINWORK 2%
ACCURACY & PROPORTION 2%
LAYOUT & NEATNESS 1%
TOTAL 10%

[10]
QUESTION 2

MARK ALLOCATION:

CORRECTNESS: 5%
FSIV: 7%
FSTV: 5%
FSLV: 3%
LINEWORK: 3%
ACCURACY: 2%
LAYOUT & NEATNESS: 25%
TOTAL: 100%

MARKING GUIDELINE
-3- ENGINEERING DRAWING N3

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Please turn over
QUESTION 3

SWIVEL HEAD

SCALE 1:1

MARK ALLOCATION

CORRECTNESS 16%
LINEWORK 5%
ACCURACY 5%
TITLE & SCALE 2%
LAYOUT & NEATNESS 2%
TOTAL 30%

✓ = 1 MARK
✓ = ½ MARK

[30]
QUESTION 4

MARK ALLOCATION

CORRECTNESS:

✓ = 1 MARK

✓ = ½ MARK

FSFV (ITEM 1) 3%
FSFV (ITEM 2) 5%
FSLV (ITEM 2) 4%
LINENWORK 3%
ACCURACY 3%
LAYOUT & NEATNESS 2%
TOTAL 20%
QUESTION 5

MARK ALLOCATION
CORRECTNESS 8%  
LINENWORK 2%  
ACCURACY 2%  
SCALE 2%  
LAYOUT & NEATNESS 1%  
TOTAL 15%

\[ \checkmark = 1 \text{ MARK} \]
\[ \sqrt{\text{ = 0.5 MARK} \]

TOTAL: 100
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