higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING GRAPHICS AND DESIGN
(Second Paper)
NQF LEVEL 3

(6021023)

9 November 2018 (X-Paper)
09:00–13:00

REQUIREMENTS: A2 drawing sheet

Drawing instruments may be used.

This question paper consists of 4 pages and 5 diagram sheets.

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TIME: 4 HOURS
MARKS: 100

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. Draw a 20 mm border on both sides of the DRAWING SHEET.
6. ALL drawings, including the candidate's information, must be done in pencil.
7. A balanced layout is important and candidates will be penalised for poor planning.
8. A radius curve stencil may be used to draw arcs.
9. Use your own discretion where dimensions are not given.
10. ALL drawing work must conform to the latest SABS 0111 Code of Practice for Engineering Drawing.
11. Write neatly and legibly.

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QUESTION 1

1.1 FIGURE 1, DIAGRAM SHEET 1 (attached), shows a table.

Draw the table and print the answers to the following questions using 3 mm lettering. (2)

1.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and print only 'True' or 'False' next to the question number (1.2.1–1.2.4) in the TABLE.

1.2.1 Sectional lines are thick (0,5 mm), black, uniform and uniformly spaced.

1.2.2 Sectional lines are parallel to the visible outline of the sectioned surface.

1.2.3 Section lines stop short of the outline of the sectioned surface.

1.2.4 Section lines do not extend beyond the outline of the surface.

(4 × 2) (8)

[10]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 2 (attached), shows TWO views of a casting in first-angle orthographic projection.

Do NOT copy the given views.

2.1 Construct an isometric scale. (2)

2.2 Draw an isometric view of the casting in first-angle orthographic projection using the isometric scale. A must be the lowest point of the isometric drawing. (13)

[15]

QUESTION 3

FIGURE 3, DIAGRAM SHEET 3 (attached), shows a truncated right cone which is cut at an angle of 30°. The cone is open on both ends.

3.1 Draw, to scale 1 : 1, the given views. (4)

3.2 Develop the surface of the cone. (13)

[17]

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QUESTION 4

FIGURE 4, DIAGRAM SHEET 4 (attached), shows TWO views of a pillar bearing in third-angle orthographic projection.

Draw, to scale 1 : 1, the following detail drawings:

4.1 A full-sectional front view of item 1 (15)

4.2 A full-sectional front view of item 2 (9)
[24]

QUESTION 5

FIGURE 5, DIAGRAM SHEET 5 (attached), shows the components of a cam pulley in third-angle orthographic projection. The parts list is as follows:

ITEM	NAME	NO PER ASSY
1	Bracket	1
2	Side plate	1
3	Cam shaft	1
4	Pulley	1
5	Spacer	1
6	M16 bolt	2
7	Washer	1
8	M16 nut	1

5.1 Draw, to scale 1 : 1, a full-sectional right view of the assembly. (25)

5.2 Insert the item numbers on the assembly drawing. (7)

5.3 Insert the title and scale centred below the assembly drawing. (2)
[34]

TOTAL: 100

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DIAGRAM SHEET 1

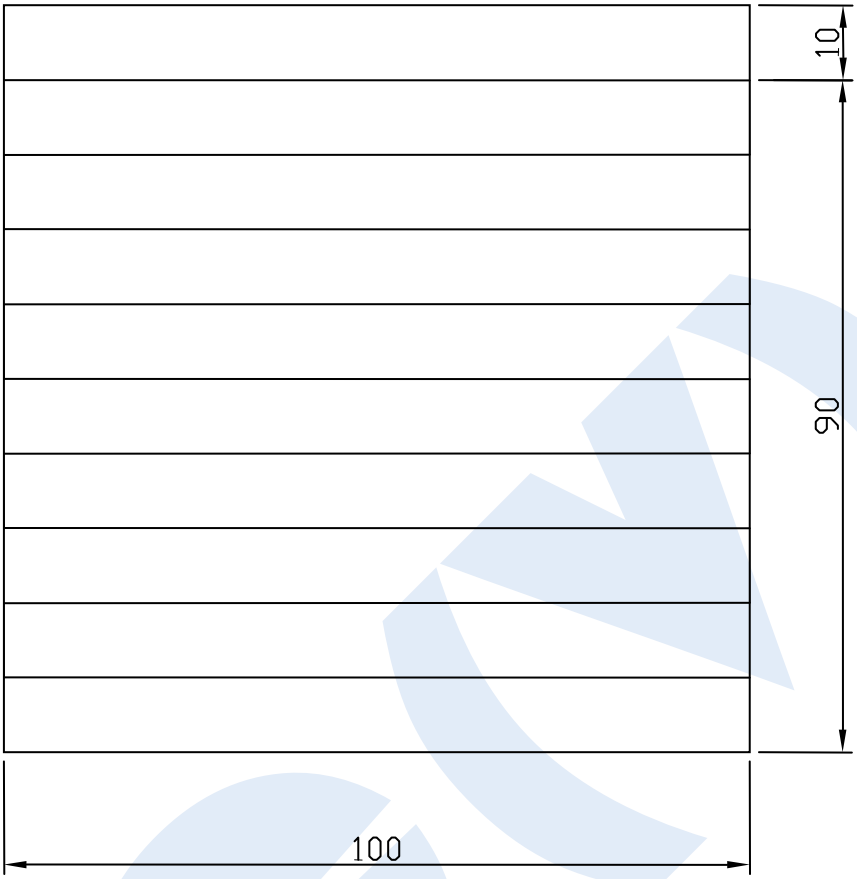


FIGURE 1

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DIAGRAM SHEET 2

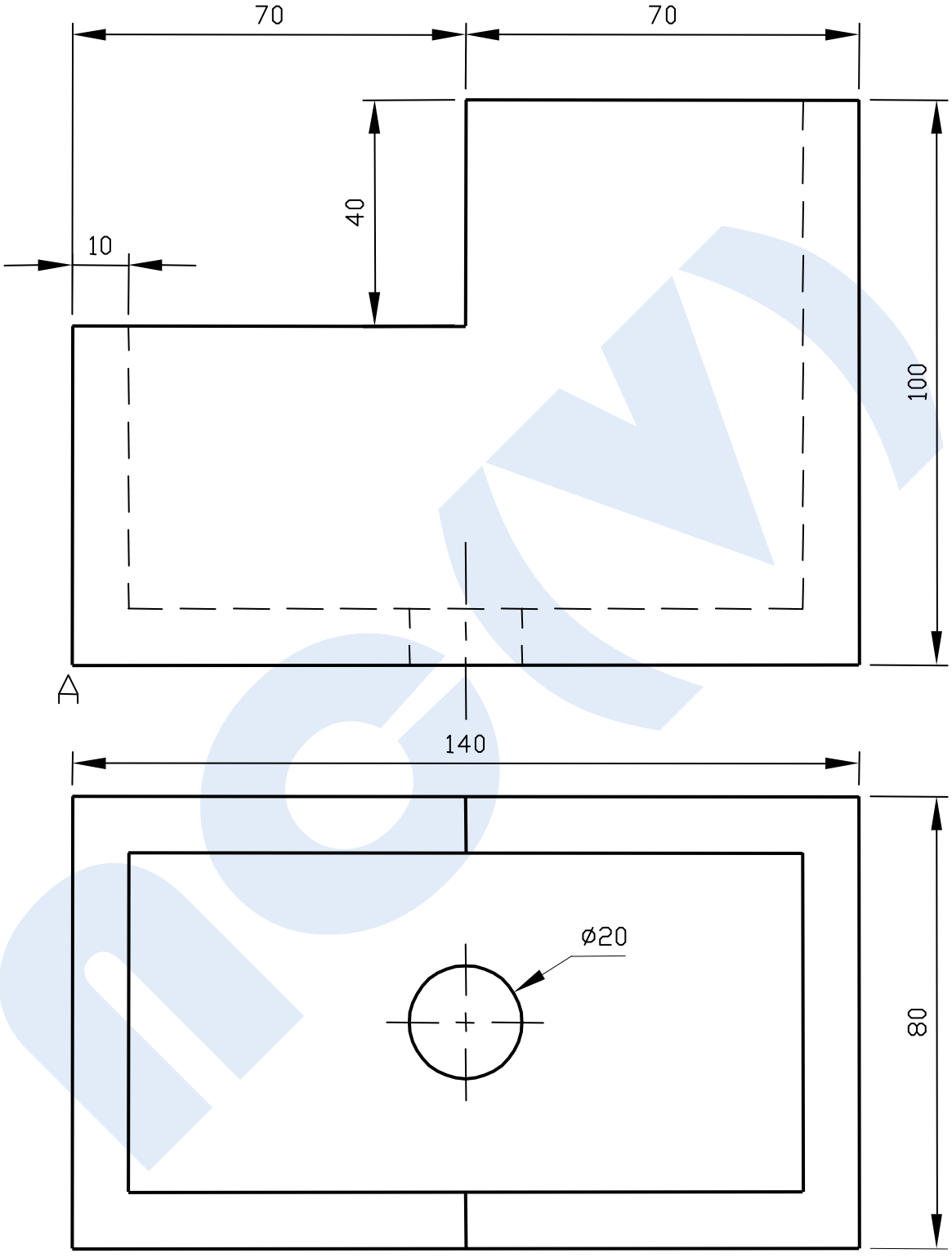


FIGURE 2

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DIAGRAM SHEET 3

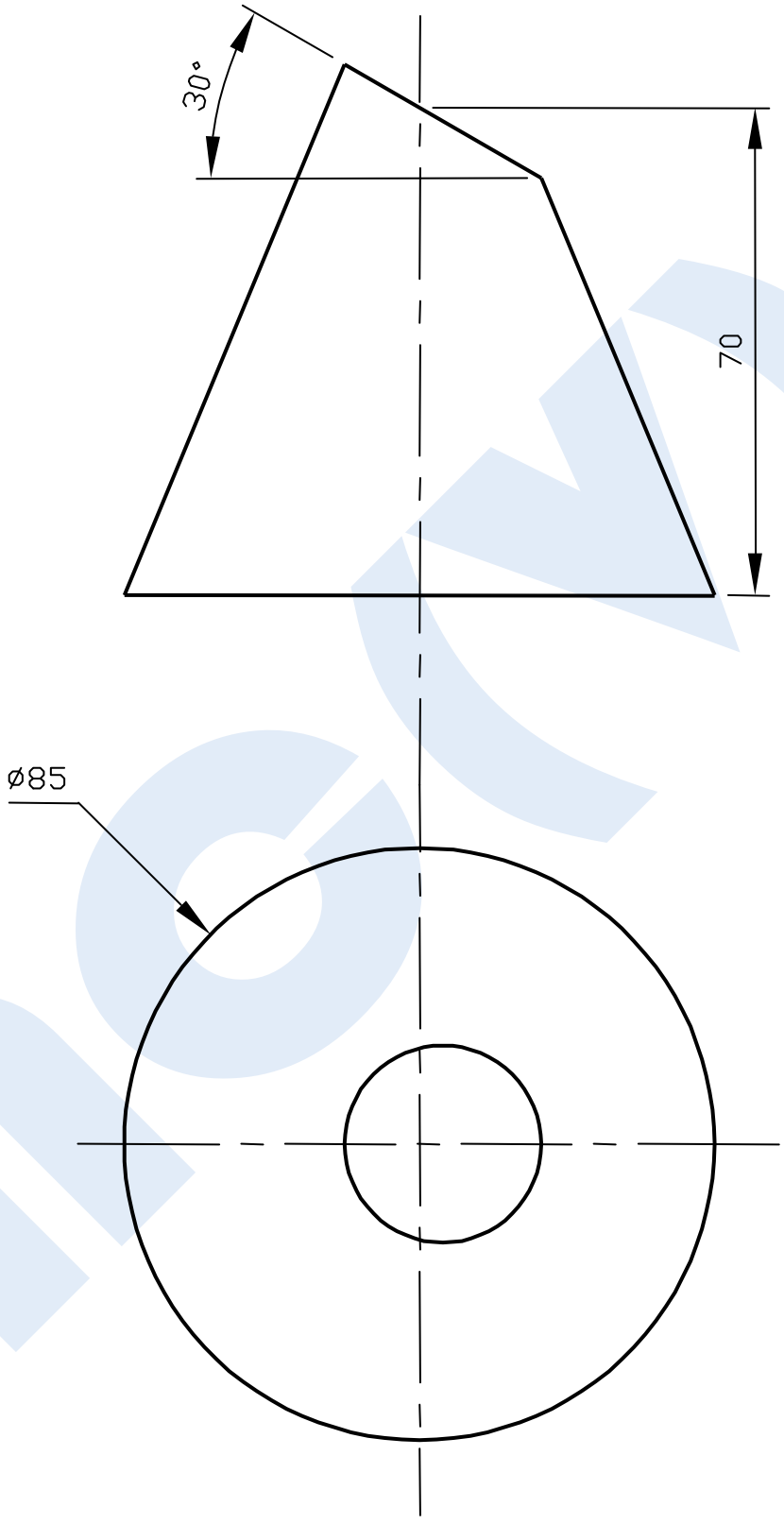


FIGURE 3

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DIAGRAM SHEET 4

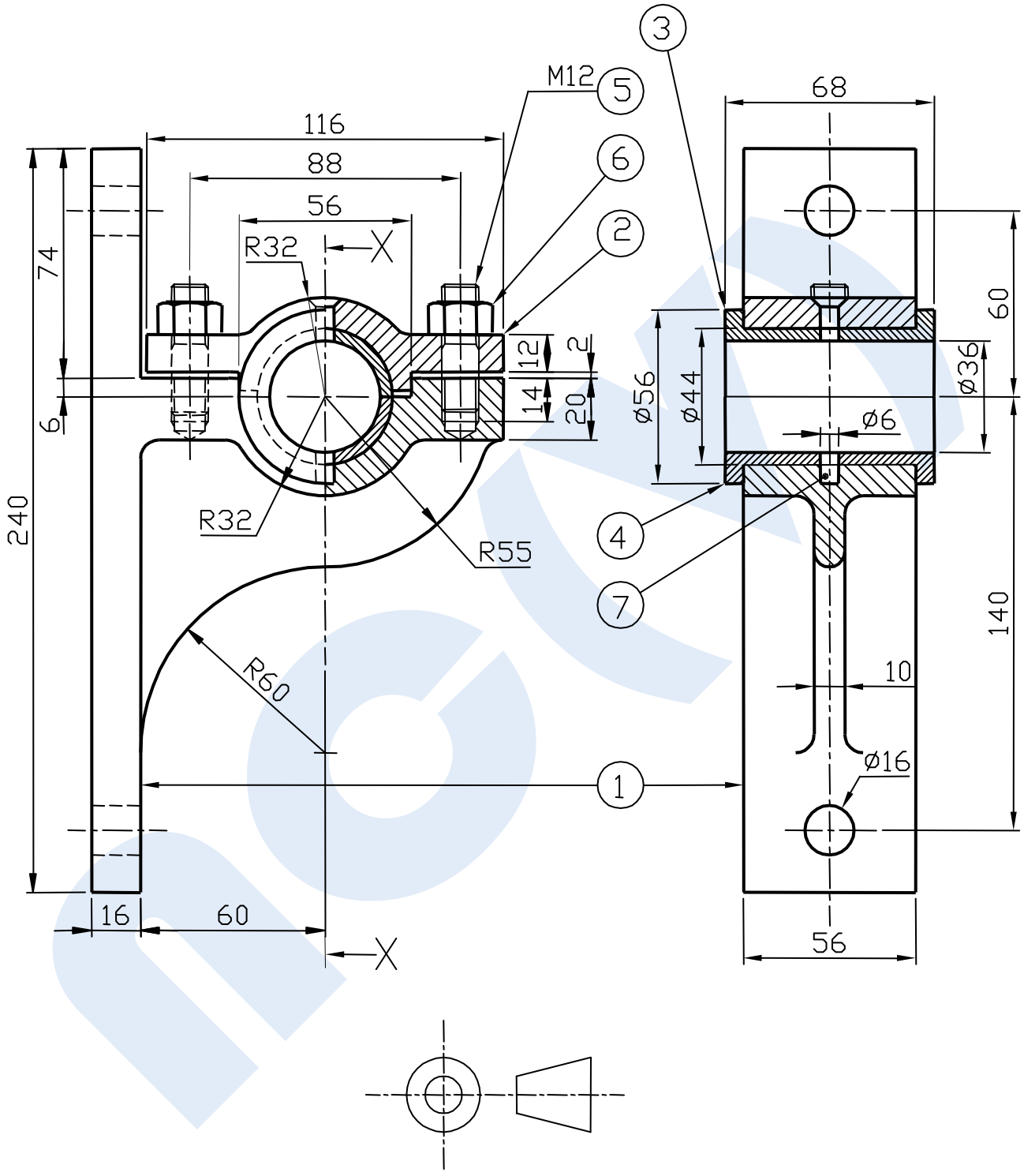


FIGURE 4

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DIAGRAM SHEET 5

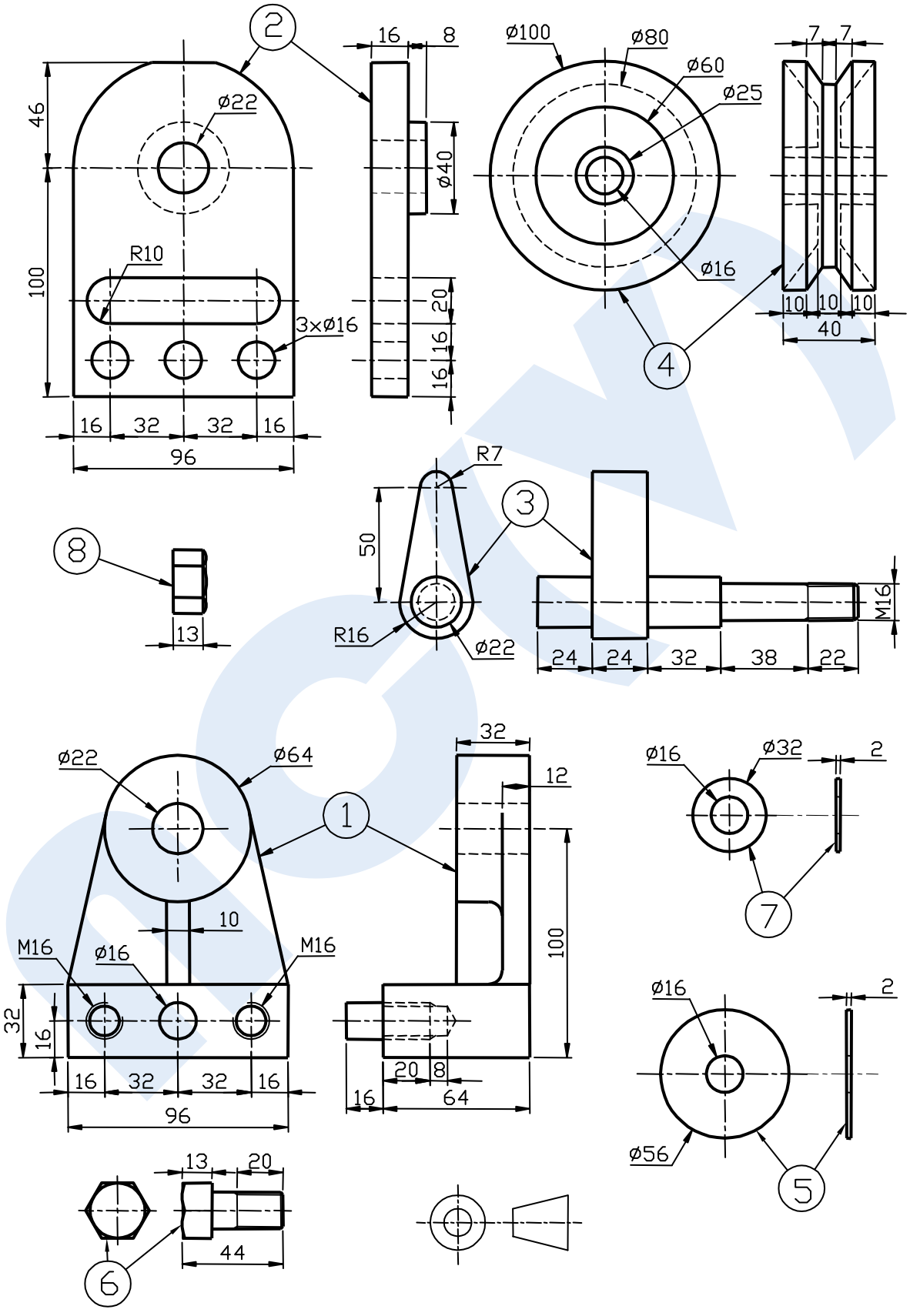


FIGURE 5

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