higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T600**(E)**(M23)T

NATIONAL CERTIFICATE

ENGINEERING DRAWING N2

(8090272)

23 March 2017 (X-Paper)
09:00–13:00

REQUIREMENTS: A2 drawing sheet

Calculators and drawing instruments may be used.

This question paper consists of 8 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
ENGINEERING DRAWING N2
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. ALL drawing work, including candidate information, must be done in pencil.
5. Marks will be deducted for untidy work.
6. A radius curve stencil may be used to draw smaller arcs.
7. Unspecified radii must be R3.
8. ALL drawings must conform to the latest SANS 10111 Codes of Practice.
9. ALL work you do not want to be marked must be clearly crossed out.
10. Write neatly and legibly.

QUESTION 1: WELDING, ELECTRICAL FITTINGS, FASTENERS

1.1 Write down the meaning of the following abbreviations:

1.1.1 AF

1.1.2 CHAM

1.1.3 PCD

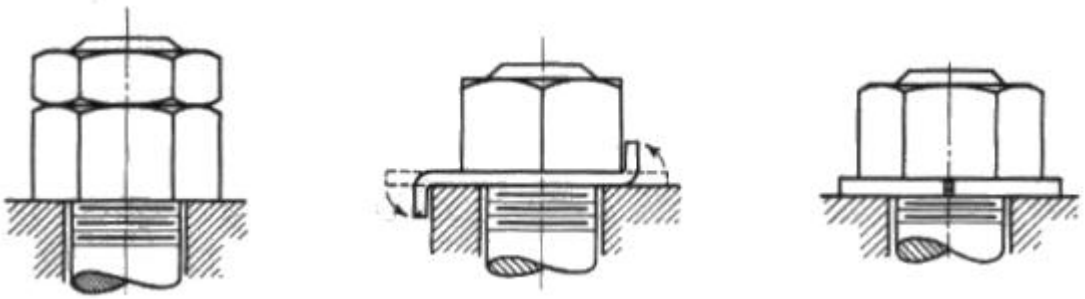
1.1.4 ASSY

(4 × 1) (4)

1.2 Draw the welding symbol that indicates a fillet weld is to be done all round and on-site. (4)

1.3 Explain *on-site welding*. (1)

1.4 Name the types of locking devices shown in FIGURE 1. Write only the answer next to the question number (1.4.1–1.4.3) in the ANSWER BOOK.



1.4.1 1.4.2 1.4.3

FIGURE 1

(3 × 1) (3)

1.5 Make a neat freehand drawing of an end box used as an electrical fitting. (3)

[15]

QUESTION 2: SCREW THREADS

FIGURE 2 shows a machined spindle.

Draw the given view to a scale of 1 : 1. Provide the 77 mm shank length with a single-start external left-hand square screw thread with a pitch of 14 mm.

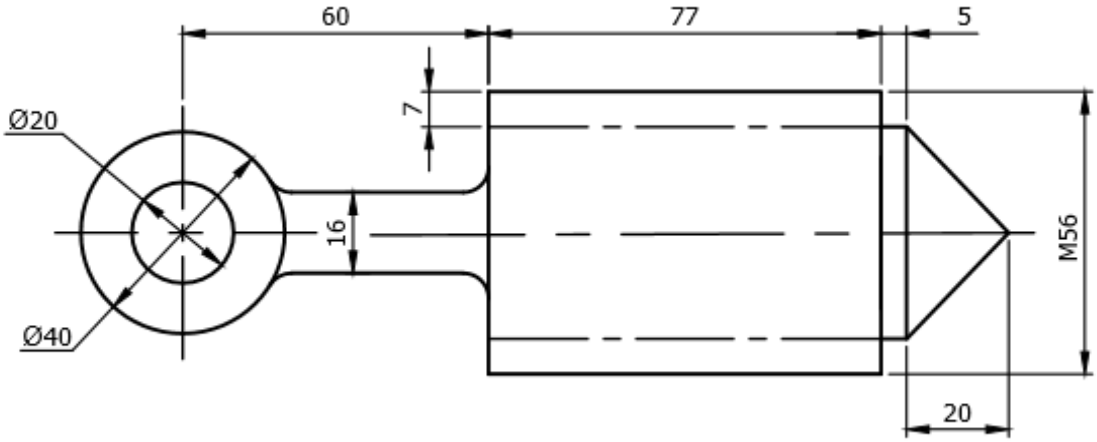


FIGURE 2 **[12]**

QUESTION 3: FIRST-ANGLE ORTHOGRAPHIC PROJECTION

FIGURE 3 shows a half-sectional front view and an outside left view of a pulley assembly without the M24 hexagonal nut in position.

Draw to scale 1 : 2 and in first-angle orthographic projection the following views:

3.1 A full-sectional front view with the M24 hexagonal nut in position (12)

3.2 An outside top view with the M24 hexagonal nut in position (10)

No hidden detail required.

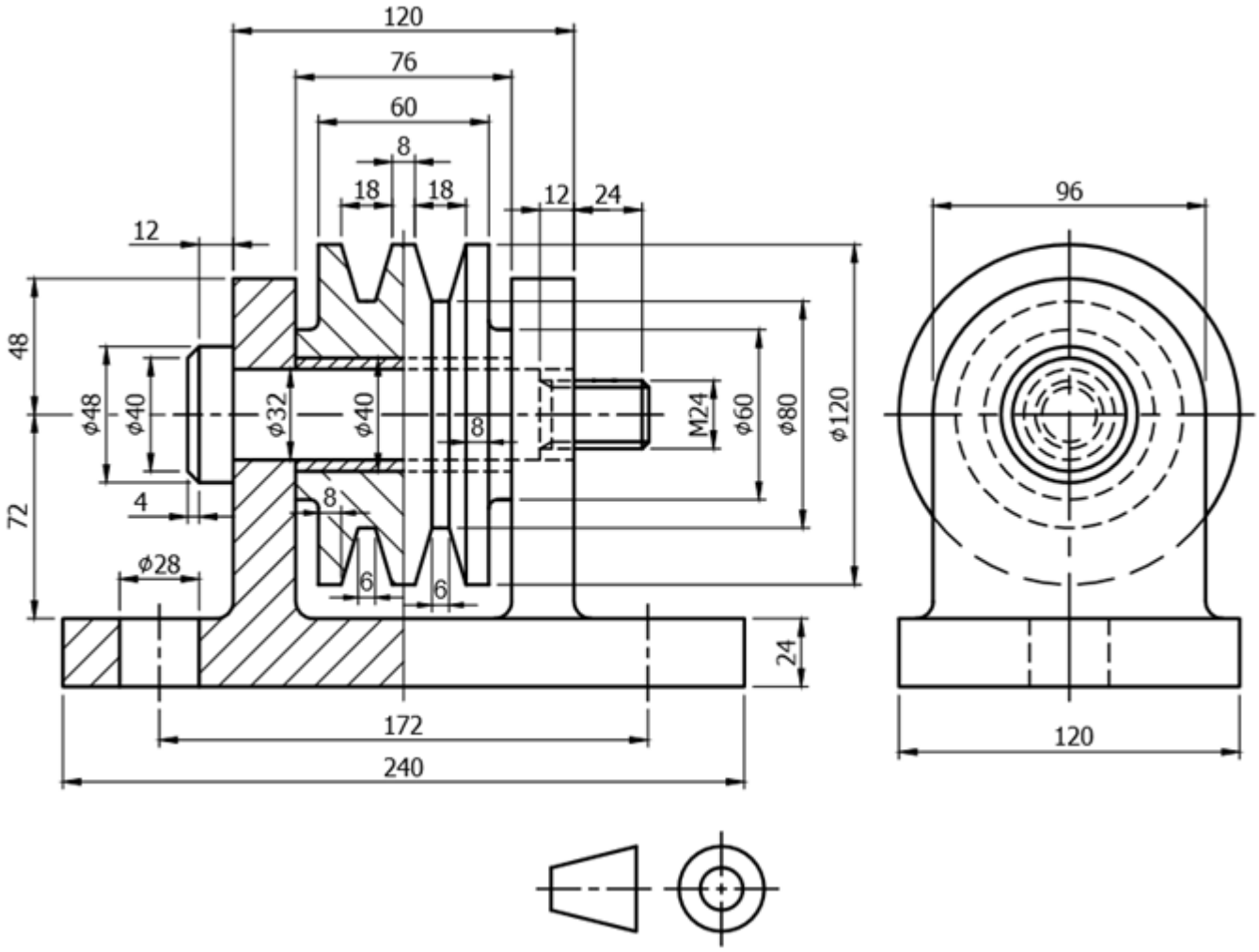


FIGURE 3 **[22]**

QUESTION 4: ISOMETRIC DRAWING

FIGURE 4 shows two views of a workpiece in first-angle orthographic projection.

Draw to scale 1 : 1 an isometric view of the workpiece. Point R must be the lowest point.

No hidden detail required.

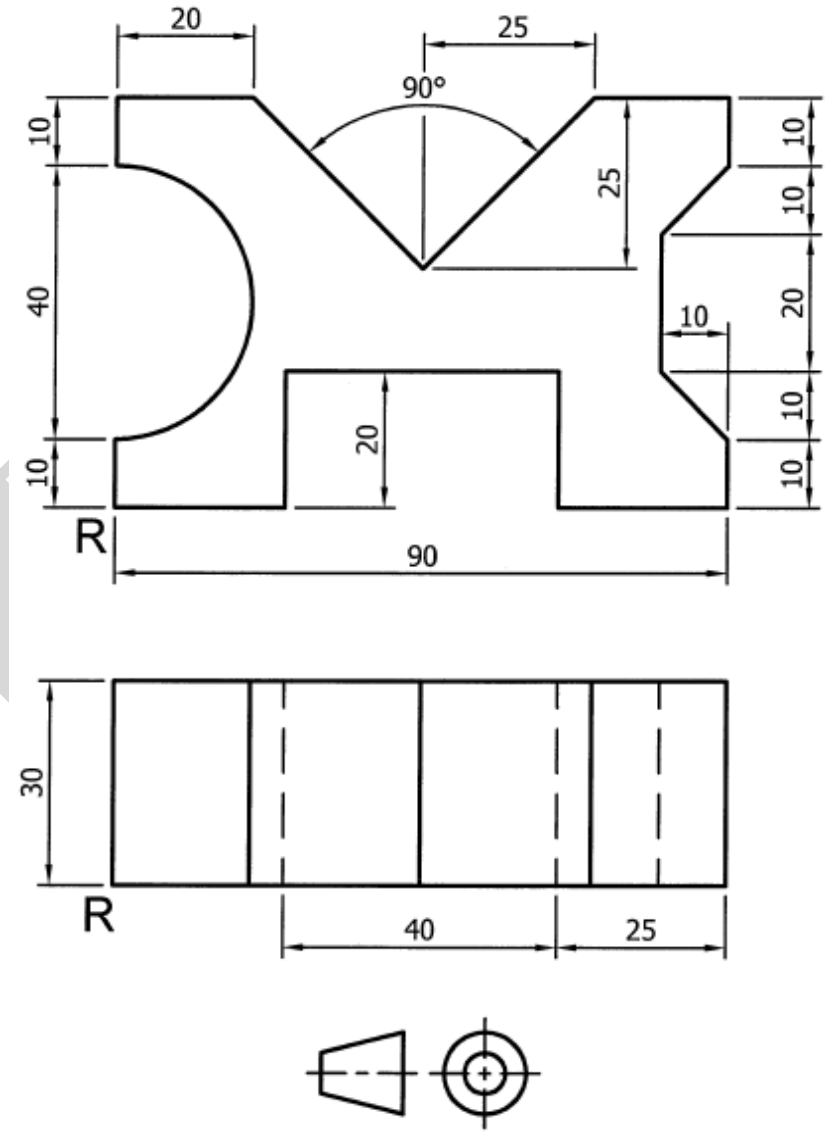


FIGURE 4 **[13]**

QUESTION 5: INTERPENETRATION

FIGURE 5 shows two views of a hexagonal pipe penetrating a square pipe at right angles.

Redraw the two views in first-angle orthographic projection to scale 1 : 1 and show the following:

5.1 The curve of interpenetration on the front view

5.2 All the construction lines needed to project the curve of interpenetration

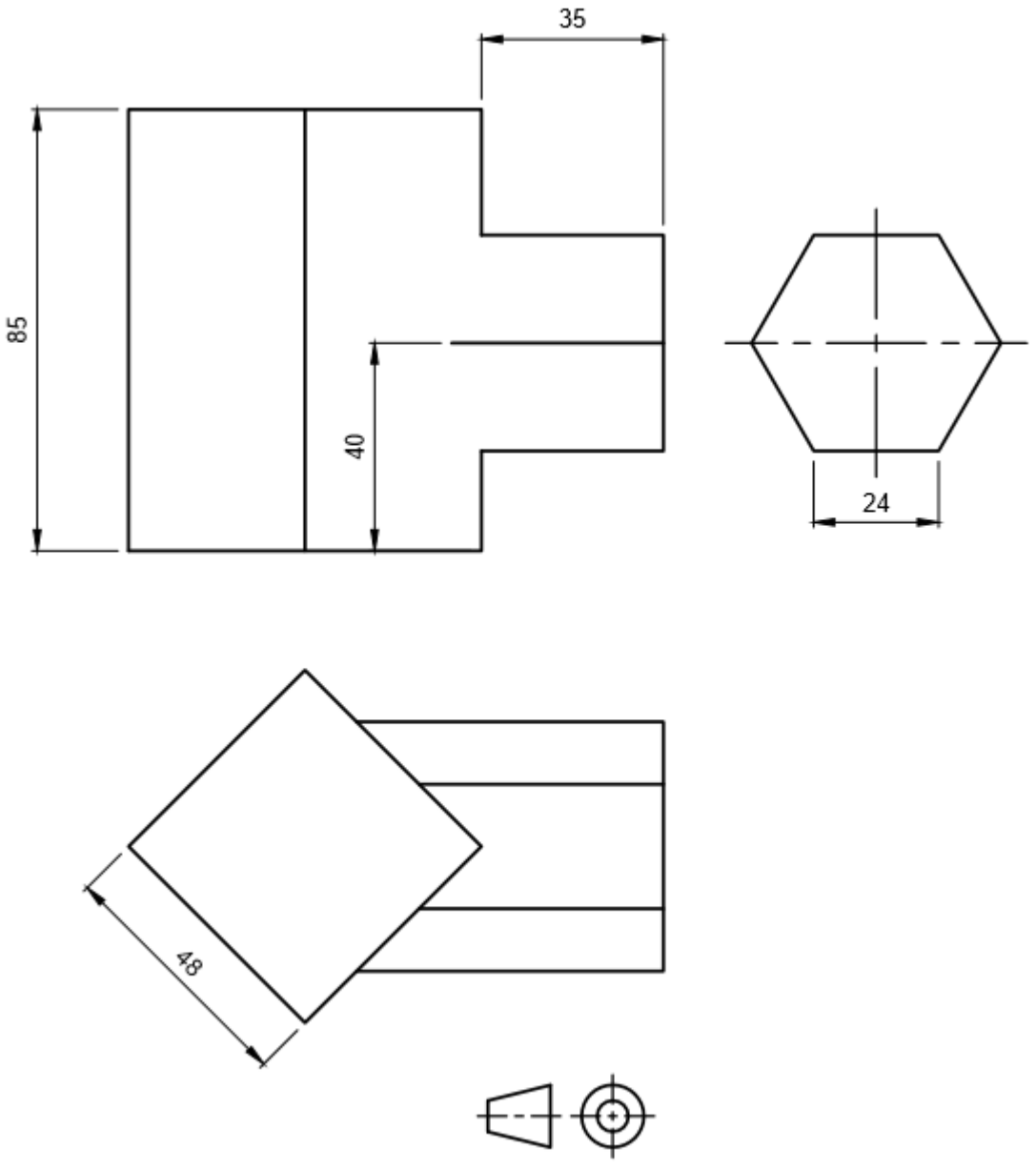


FIGURE 5 **[13]**

QUESTION 6: THIRD-ANGLE ORTHOGRAPHIC PROJECTION

FIGURE 6 shows an outside front and top view of a bracket.

Draw to scale 1 : 1 and in third-angle orthographic projection the following views of the bracket:

6.1 A full-sectional front view on cutting plane B-B (7)

6.2 A full-sectional right view on cutting plane A-A (8)

6.3 An outside top view (7)

6.4 Add a suitable title and scale beneath the layout. (2)

6.5 Insert the third angle orthographic projection symbol beneath the layout. (1)

No hidden detail required.

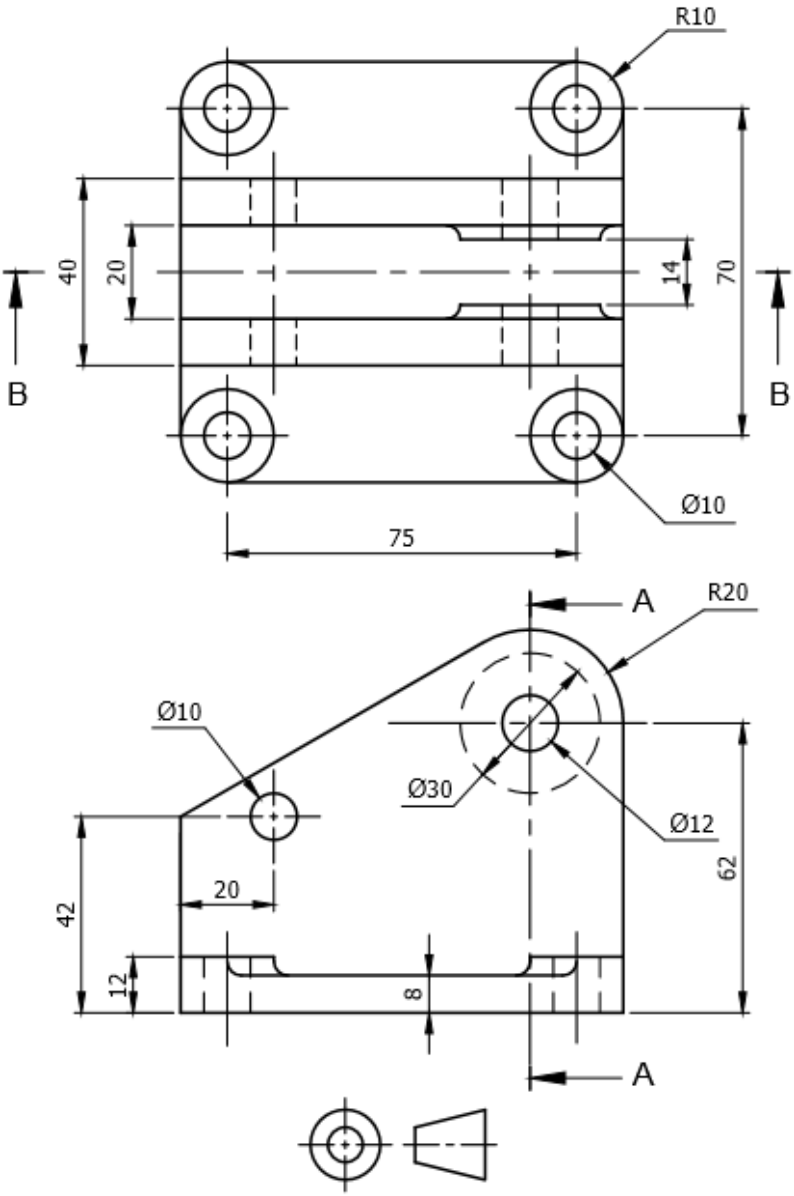


FIGURE 6 **[25]**

TOTAL: 100