higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MECHANICAL DRAUGHTING AND TECHNOLOGY

(First Paper)

NQF LEVEL 4

(12050694)

7 November 2018 (Y-Paper)
13:00–15:00

REQUIREMENTS: A4 drawing sheet

Calculators and drawing instruments may be used.

This question paper consists of 6 pages.

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TIME: 2 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. Do ALL drawing work in pencil.
5. A radius curve stencil may be used to draw smaller arcs.
6. A balanced layout is very important and candidates will be penalised for poor planning.
7. Write neatly and legibly.

NC(N7)

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QUESTION 1: GENERAL

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.1–1.5) in the ANSWER BOOK.

1.1 Brass is an alloy of copper and tin.

1.2 Spot facing is the conical enlargement of the mouth of a hole.

1.3 Section lines can be drawn at any angle.

1.4 Tempering reduces brittleness and increases the toughness of metal.

1.5 Some jackscrews use a square thread.

(5 × 1) **[5]**

QUESTION 2: FREEHAND DRAWING

Make a neat A5-sized drawing to explain the machining process of counter boring. **[10]**

QUESTION 3: DESIGN PROCESS

3.1 List EIGHT main steps in the design process. (8 × 2) (16)

3.2 Name TWO models used in the engineering-design process. (2 × 2) (4)
[20]

QUESTION 4: SPUR GEAR

4.1 Make a labelled freehand drawing of a gear tooth profile. (15)

4.2 The drawing should be done on an A4 DRAWING SHEET. (5)
[20]

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QUESTION 5: SQUARE THREADS AND SPRINGS

5.1 Study FIGURE 1 and answer the questions.

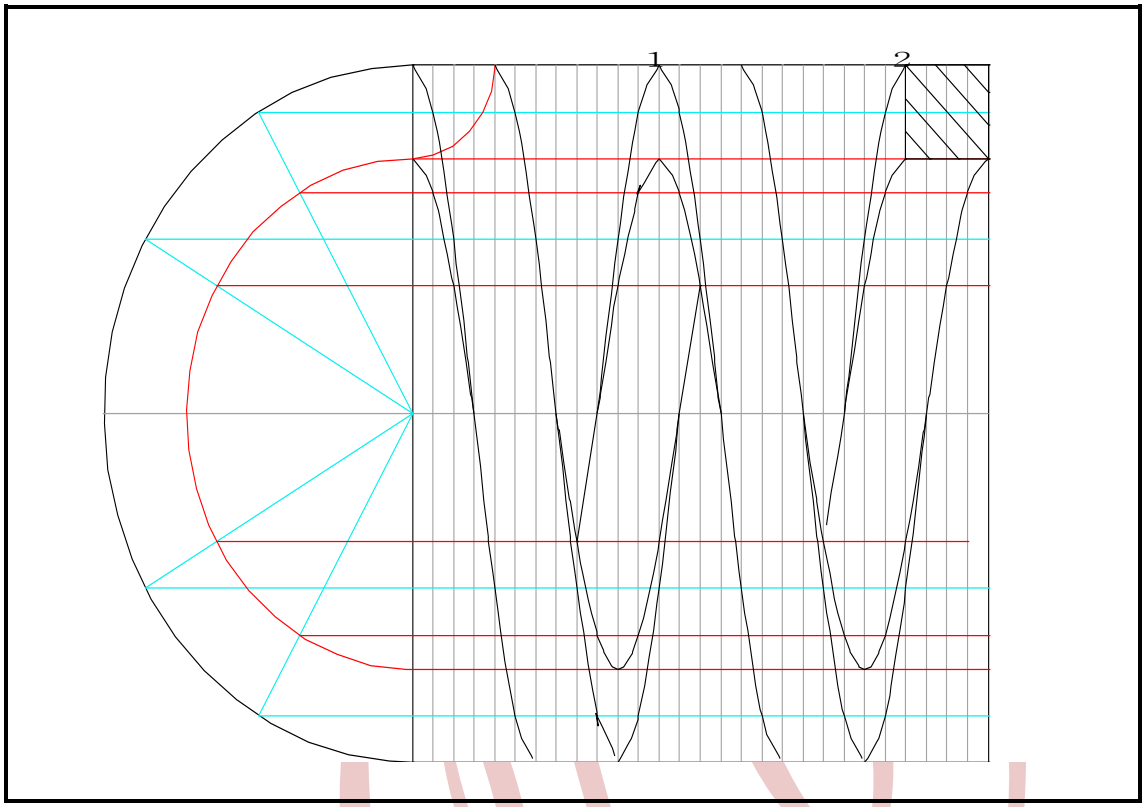

FIGURE 1

5.1.1 Name the thread. (2)

5.1.2 How many full turns are there? (2)

5.1.3 Is it a right-hand or left-hand turn? (2)

5.2 Define the term *lead.* (2)

5.3 Name THREE types of screw threads used in the industry. (3 × 2) (6)

[14]

QUESTION 6: MACHINING AND SECTIONING

6.1 What is the function of machining symbols on a drawing? (2)

6.2 What is the function of a sectional view? (2)

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6.3 FIGURE 2 shows the components of a pedestal bearing.

Identify each component by writing only the name of the component next to the number (1–6) in the ANSWER BOOK. (6 × 2) (12)

[16]

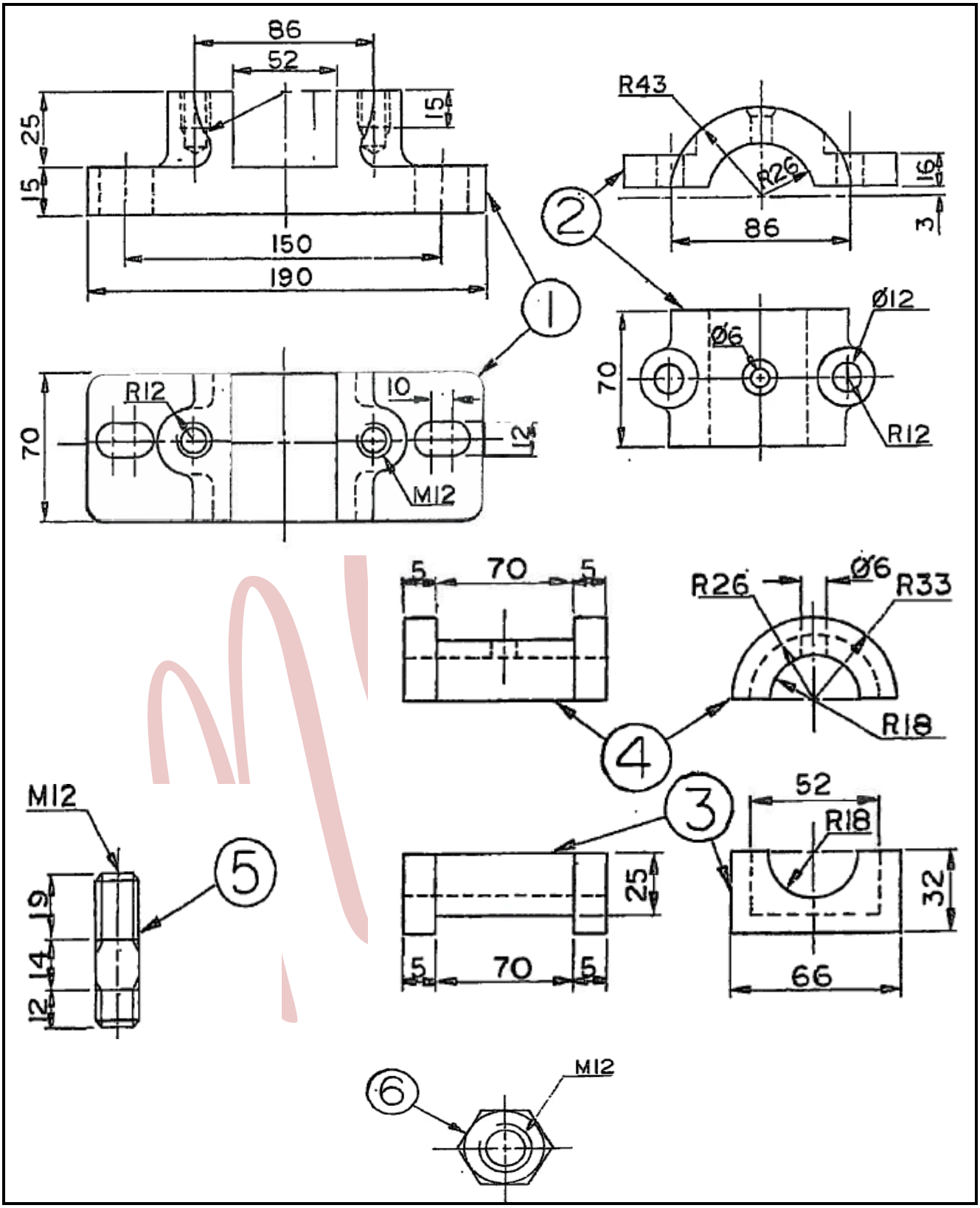

FIGURE 2

QUESTION 7: CAMS

7.1 FIGURE 3 shows a displacement diagram of height 38 mm.

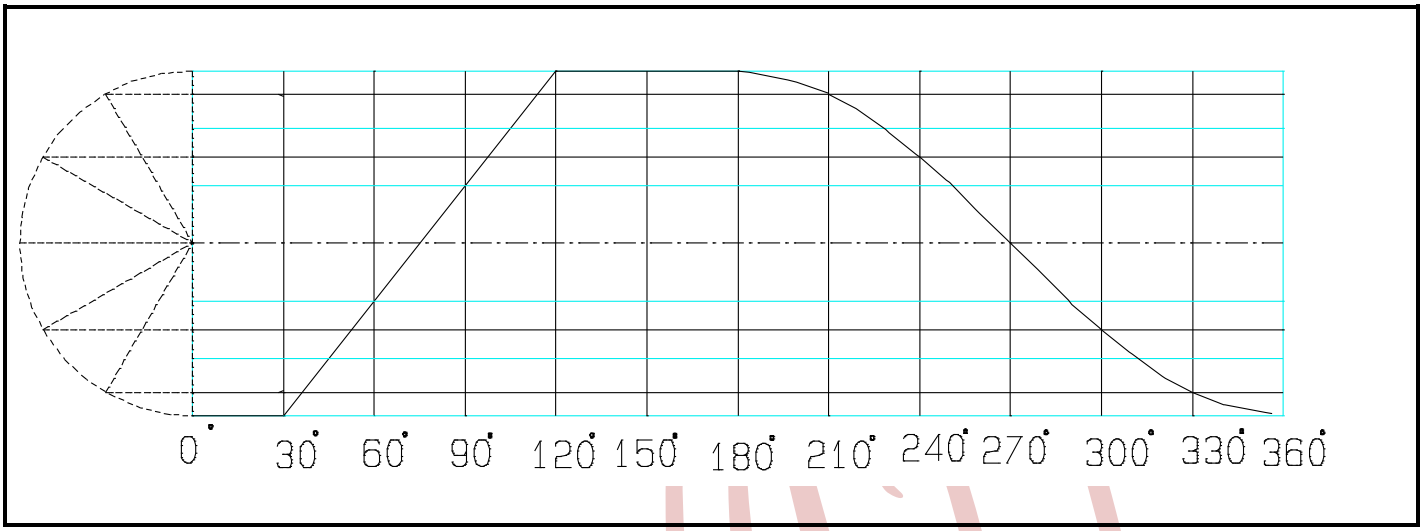

FIGURE 3

Explain the performance that took place in point form. (6)

7.2 Name THREE types of cam followers. (3 × 2) (6)

7.3 What is meant by the abbreviation UAR? (3)

[15]

TOTAL: 100

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