higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T40**(E)**(A14)T

NATIONAL CERTIFICATE

AIRCRAFT METALWORK THEORY N3

(11021113)

14 August 2019 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
AIRCRAFT METALWORK THEORY N3
TIME: 3 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. Sketches must be large, neat and fully labelled.
5. Write neatly and legibly.

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QUESTION 1: DEVELOPMENT

FIGURE 1 shows a metal object in the shape of the frustum of an oblique cone.

Copy the article to the ANSWER BOOK and develop the full structure of the cone. Show ALL the projection lines on the full structure. ALL dimensions are in millimetres.

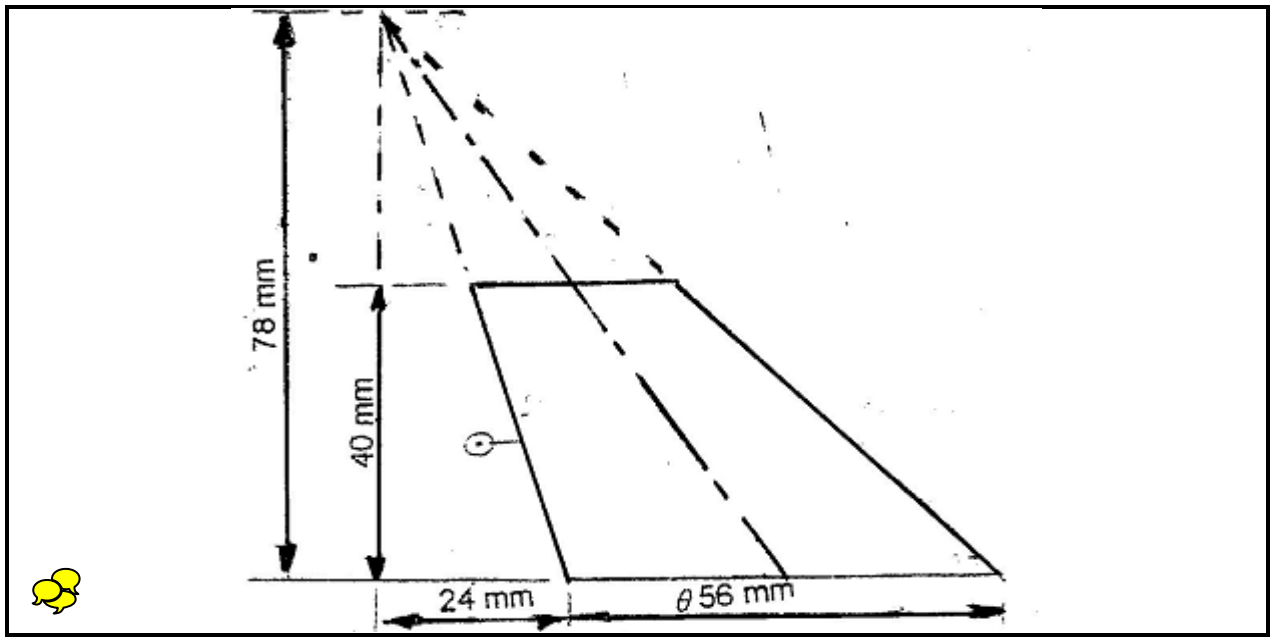


FIGURE 1 **[15]**

QUESTION 2: TOOLS/WORKSHOP

2.1 FIGURE 2 shows a pneumatic rivet gun.

Identify the indicated parts by writing the answer next to the letter (A–F) in the ANSWER BOOK

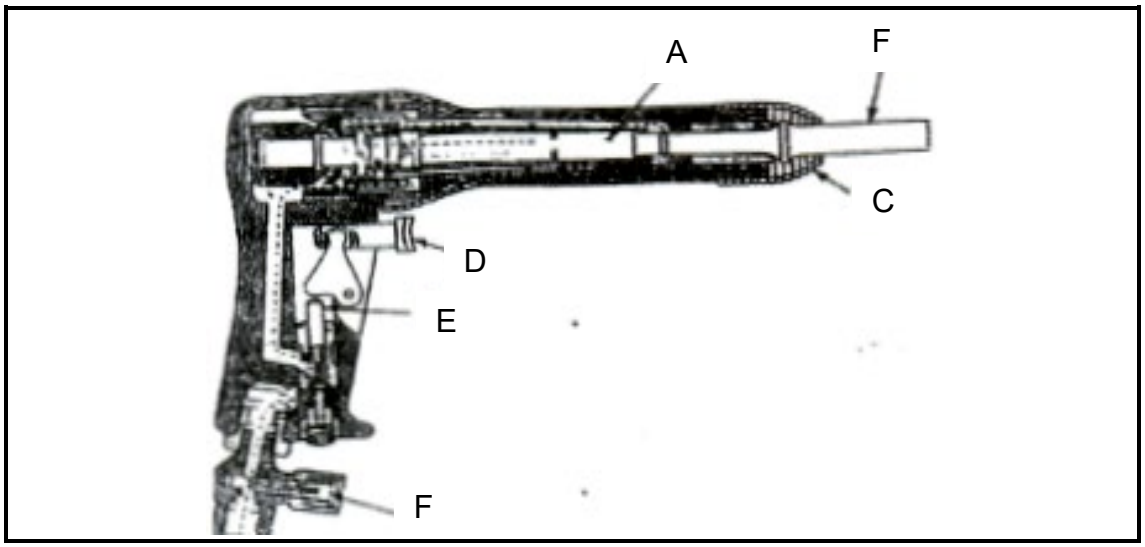


FIGURE 2 (6)

2.2 Identify FOUR advantages regarding optimal use of space for staff and material in a well-designed workshop. (4)

2.3 Describe the correct use of bucking bars during riveting. (5)
[15]

QUESTION 3: MATERIAL

3.1 Calculate the bending allowance to bend a plate of 1,8 mm thick around a radius of 40 mm through an angle of 90 degrees. (5)

3.2 Titanium A-B-C classification was established to provide a simple means of describing all titanium alloys.

Explain each of the following characteristics:

3.2.1 A – alpha (3)

3.2.2 B – beta (3)

3.3 List FOUR reasons for using heat treated titanium. (4)
[15]

QUESTION 4: CORROSION

4.1 Study FIGURE 3 and answer the questions.

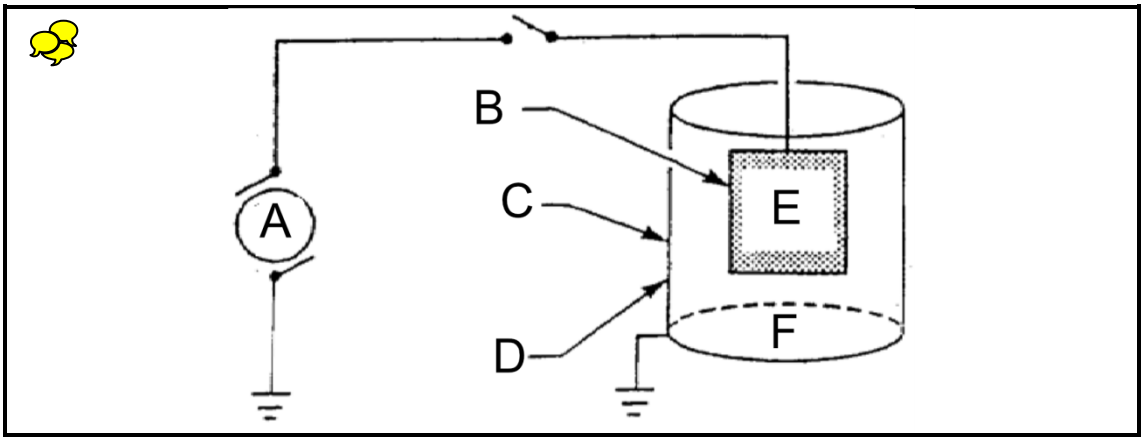


FIGURE 3

4.1.1 Name the marked parts of the component by writing the answer next to the letter (A–F) in the ANSWER BOOK. (6)

4.1.2 Identify the process and describe how the test is done. (6)

4.2 Explain *metal spraying*. (3)
[15]

QUESTION 5: FASTENERS

5.1 Make a neat sketch of a taper-lok fastener. (5)

5.2 Describe each of the following:

5.2.1 Preparation of taper-lok fasteners (5)

5.2.2 Installation of taper-lok fasteners (5)
[15]

QUESTION 6: STRUCTURAL REPAIRS

6.1 Explain with neat sketches the transition repair on a honeycomb structure. (10)

6.2 Describe how to use a microshaving machine when repairing a countersunk rivet. (10)
[20]

QUESTION 7: GENERAL

7.1 Name FOUR factors on which bend allowance in sheet metal depends. (4)

7.2 What is meant by *joggling*? (1)
[5]

TOTAL: 100

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