higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

AIRCRAFT METALWORK THEORY N2

14 AUGUST 2019

This marking guideline consists of 6 pages.

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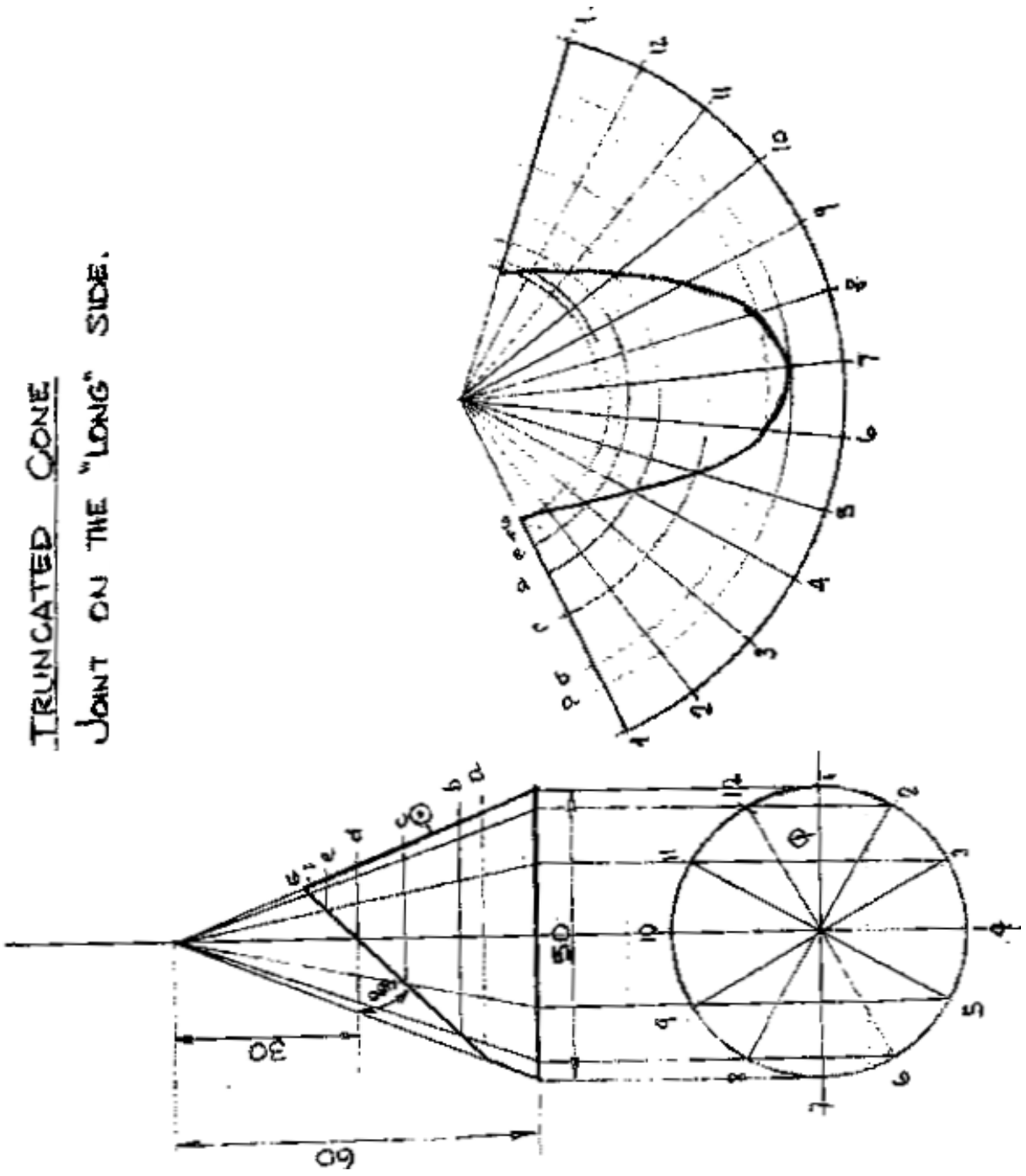
QUESTION 1



TRUNCATED CONE
JOINT ON THE LONG SIDE

(Correct drawing) (7)
(Development) (8)
[15]

QUESTION 2

2.1 Diameter of rivet being used (1)

2.2 To prevent✓ the metal from cracking✓ (2)

2.3 One size smaller✓ than the rivet shank✓ (2)

2.4 Right hand✓ lower corner✓ (2)

2.5 Two✓ dissimilar metals✓ (2)

2.6 Copper (1)
[10]

QUESTION 3

3.1
- Strength
- Mass
- Reliability (3)

3.2 3.2.1 T–3 Solution heat-treated✓ then cold-worked✓

3.2.2 T–4 Solution heat-treated ✓ then naturally aged✓

3.2.3 T–6 Solution heat-treated ✓ then artificially aged✓

3.2.4 T–7 Solution heat-treated ✓ then stabilised✓

(4 × 2) (8)

3.3
- Heated for a prescribed period at a prescribed temperature✓
- Then cooled rapidly✓
- Ageing✓ naturally or artificially✓ (4)

[15]

QUESTION 4

4.1
- Adequate cleaning
- Periodic inspections
- Detailed inspections for corrosion
- Prompt treatment of corrosion
- Keeping drain holes clean

4.2
- Soil and atmospheric dust
- Oil, grease and engine oil residue
- Salt water and salt water condensation
- Spilled battery acids
- Welding and brazing flux residue

(2 × 5) **[10]**

QUESTION 5

5.1
5.1.1 None
5.1.2 'A' - Aluminum alloy
5.1.3 Raised cross
5.1.4 'B' - Contains 5% magnesium
5.1.5 Dimple
5.1.6 'AD' - Aluminum alloy (copper)
5.1.7 Raised dot
5.1.8 'D' Aluminum alloy (copper)
5.1.9 Two raised bars
5.1.10 'DD' Aluminum alloy (copper)

(10 × 1) (10)

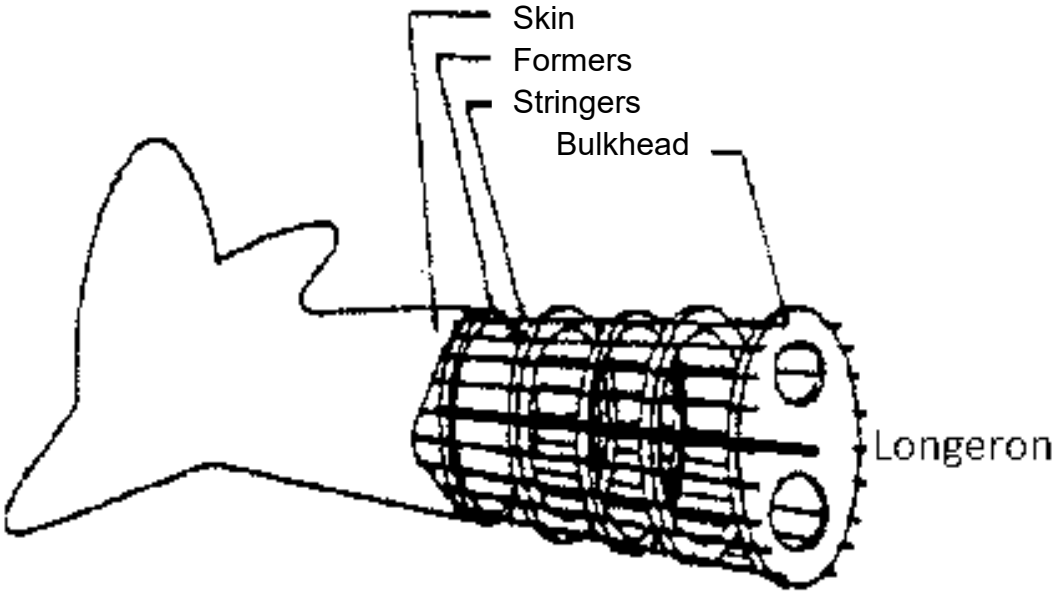
5.2
- Holes are drilled perpendicular with 2 degrees to the surface against which the bolt head will bear.
- Use a drilling and reaming fluid such as Freon TB-1.
- Protect the countersunk with paint.
- Drive or press the fastener into the hole.
- Examine the installed fastener to ensure the head is free from dishing. (5)

[10]

QUESTION 6

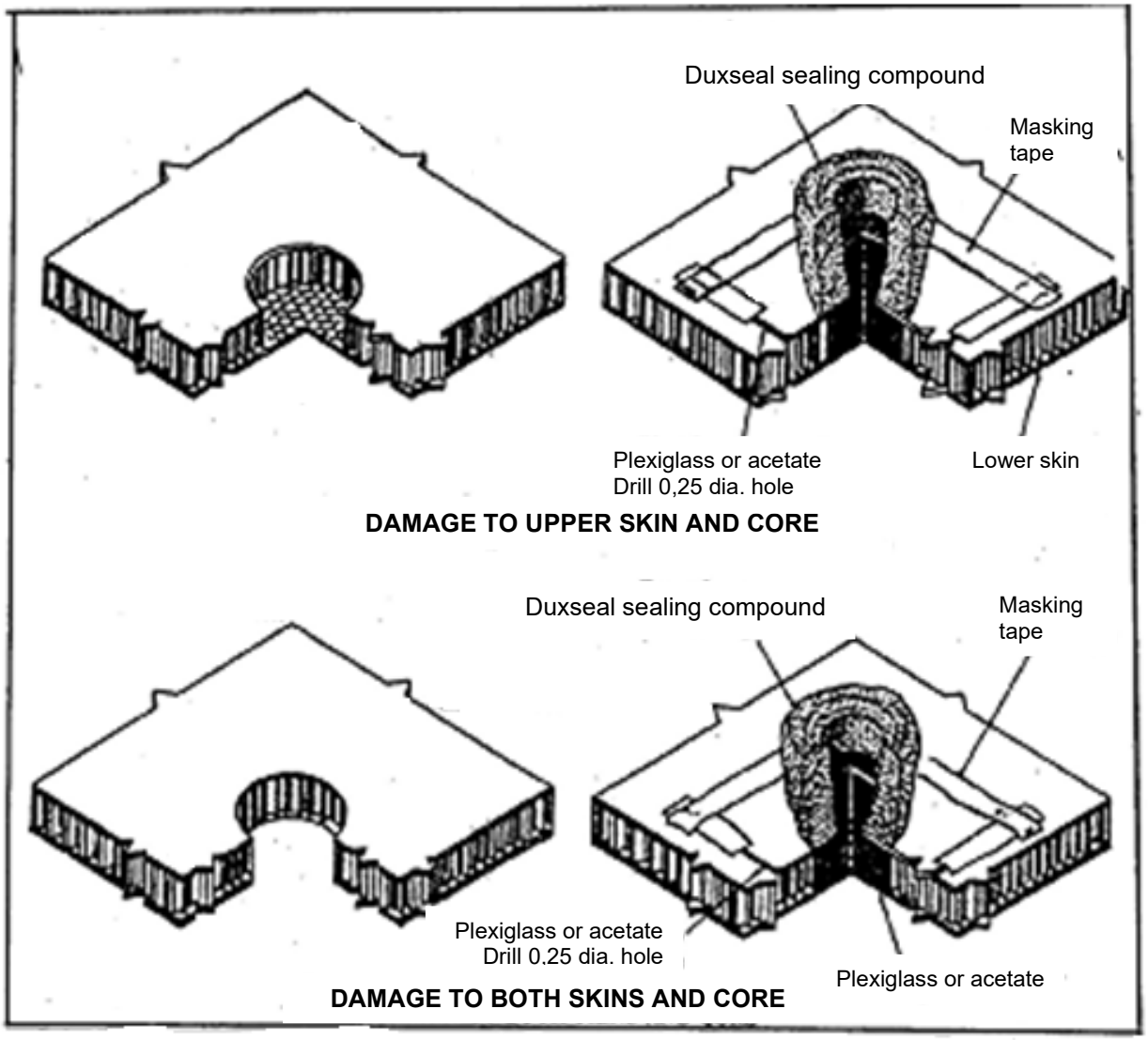
6.1 On all occasions when a metal tank is handled, every care should be taken to prevent accidental scratching✓ of its surface✓ because scratches may ultimately lead to the formation of cracks✓ or may result in corrosion✓caused by the breakdown of the protective coatings.✓ (5)

6.2



(Labels) (5)
(Sketch) (2)

6.3



OR

- Remove the damaged area with a router.
- The core replacement must be fabricated from fibre glass
- core material.
- The core plug should be flush within 0,0010 inches.
- Prepare the potting compound.
- Wipe the surface clean with MEK.
- Apply adhesive primer.
- Select and cut two sheets of polyethylene film 125 mm larger than the damaged area.
- Prepare adhesive according to procedures.
- Place layers of film over the core.
- Remove any air bubbles with a plastic scraper.
- Clean the area with MEK.
- Allow to cure for 12 hours.

(8 marks for sketch **OR** description of repair procedure) (8)

[20]

QUESTION 7

7.1 7.1.1 Can be used take:
- Outside measurements
- Inside measurements
- Depth measurements (3)

7.1.2 The micrometer is a precision instrument and can measure up to one hundredth of a millimetre.✓

Types:
- Outside
- Inside
- Depth (4)

7.2 A – Anvil
B – Spindle
C – Locknut
D – Reading line
E – Thimble
F – Ratchet
G – Barrel
H – Frame (8)
[15]

TOTAL: 100

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