

071506T4MTP

MECHANICAL TECHNOLOGY (PRODUCTION) LEVEL 6

ENG/OS/ME/CR/2/06/A

FABRICATE SHEET METAL PARTS

July/Aug 2023



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (ACC)**

WRITING

Time: 3 Hours

INSTRUCTIONS TO CANDIDATES

1. This paper has TWO sections: **A** and **B**.
2. You are provided with a separate answer booklet.
3. Marks for each question are as indicated.
4. Do not write on the question paper.

This paper consists of FOUR (4) printed pages with 16 questions.

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing

Turn Over

SECTION A: (40 MARKS)

*Answer **all** questions in this section.*

1. State FOUR types of metals used in sheet metal workshop. (4 Marks)
2. With an aid of a sketch, illustrate the following types of hammers;
 - a) ball peen hammer,
 - b) riveting hammer. (4 Marks)
3. State FOUR types of seams commonly used in sheet metal workshop. (4 Marks)
4. a) Define the term 'spring-back'. (2 Marks)
b) Explain how spring back may be eliminated. (2 Marks)
5. List THREE factors that affect a shearing operation. (3 Marks)
6. Define the following terms as used in sheet metal work:
 - a) notching,
 - b) deep drawing. (4 Marks)
7. Explain the following terms:
 - a) lancing,
 - b) parting,
 - c) slitting,
 - d) stilling. (4 Marks)
8. Give TWO reasons why the notching process is crucial in sheet metal work (2 Marks)
9. Define the following terms:
 - a) riveting,
 - b) soldering. (4 Marks)
10. Outline THREE advantages of a screwed joint. (3 Marks)
11. Define the term 'deburring' as a finishing process. (2 Marks)
12. List FOUR causes of an accident in a sheet metal workshop. (2 Marks)

Turn Over

SECTION B: (60 MARKS)

Answer any **three** questions in this section.

13.

- a) Describe the following methods used to lay out patterns in a sheet metal development:
 - i. parallel line method,
 - ii. radial line method,
 - iii. triangulation method. (6 Marks)
- b) Discuss the following sheet metal operations:
 - i. folding edges,
 - ii. seam making,
 - iii. planishing,
 - iv. punching,
 - v. sinking. (10 Marks)
- c) Explain the following joints:
 - i. lap joint,
 - ii. butt joint. (4 Marks)

14.

- a) List FIVE safety precaution to be observed in a sheet metal workshop. (5 Marks)
- b) With aid of sketches explain the uses of the following tools:
 - i. hatchet stake,
 - ii. funnel stake,
 - iii. beak horn stake,
 - iv. creasing iron,
 - v. planishing mandrel. (15 Marks)

15. Figure 1 below shows a blank required to form a bracket. Calculate the length of the blank required to form the bracket using the neutral line value of $0.4 T$ from the inside bend radius, given that the metal thickness (T) = 6.35 mm and the inside bend radius (r) = $2T$.

Turn Over

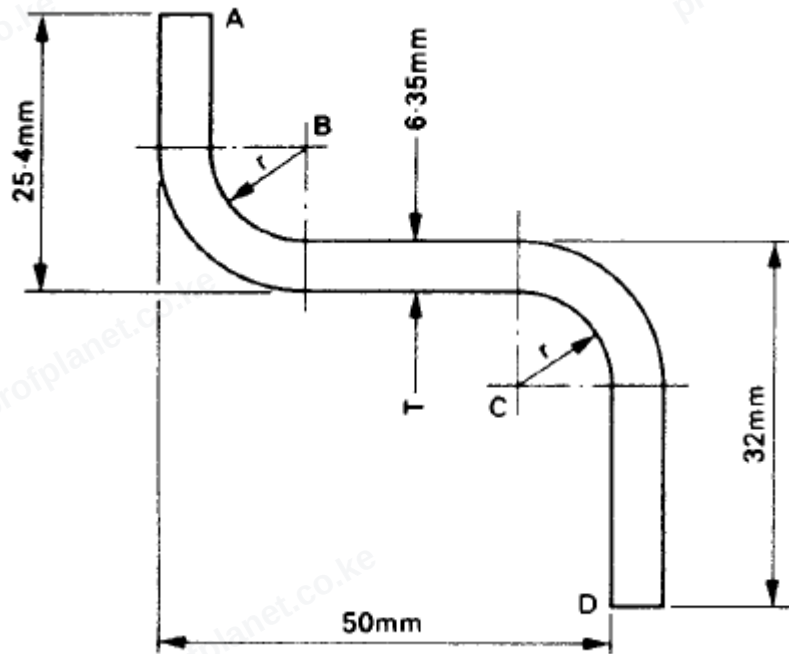


Fig 1

(20 marks)

16.

- a) Define the term 'metal spinning' (2 Marks)
- b) List THREE reasons for metal spinning during spinning process (3 Marks)
- c) Outline FIVE factors that determine the spindle speed during metal spinning process. (5 Marks)
- d) Explain the procedure for riveting two metal sheets, in a workshop. (10 Marks)

This is the last printed page.