

071505T4MTP

MECHANICAL PRODUCTION TECHNICIAN LEVEL 5

ENG/OS/ME/CR/01/5/A

FABRICATE SHEET METAL PARTS

July/August 2024



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES:

- i. This paper consists of **TWO** sections: **A** and **B**
- ii. You are provided with separate answer booklet
- iii. Answer **ALL** questions in section **A** and **THREE** in section **B**
- iv. Do not write on the question paper
- v. Marks for each question is indicated

This paper consists of FIVE (5) printed pages with SIXTEEN (16) questions.

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

TURN OVER

SECTION A: 40 MARKS

*Answer **ALL** the questions from this section*

1. Personal Protective Equipment (PPE) refers to specialized clothing or gear worn by individuals to minimize exposure to various hazards that can cause serious workplace injuries and illnesses. State THREE examples of personal protective gears. (3 Marks)
2. Stiffening refers to the process of making something more rigid or resistant to bending or deformation. Outline THREE reasons why the edge of a sheet metal is stiffened. (3 Marks)
3. Metals are widely used in various industries due to their desirable physical properties, such as strength, durability, and conductivity. State FOUR types of metals used in sheet metal. (4 Marks)
4. In a workshop setting, Safety precautions are paramount to prevent accidents and injuries while using tools like hammers. Outline FOUR safety precautions while using hammer in the workshop. (4 Marks)
5. In sheet metal fabrication, precision is key to achieving accurate cuts, bends, and assembly. State FOUR measuring tools used in sheet metal fabrication process. (4 Marks)
6. Stake is used to form sheet metal into different forms. Name THREE types of stakes. (3 Marks)
7. In sheet metal fabrication, joining parts together is crucial for creating complex structures and assemblies. State THREE ways of joining sheet metal parts. (3 Marks)
8. In sheet metal fabrication, the terms "notch" and "joint" refer to specific features used to connect or manipulate sheet metal parts. Highlight TWO differences between a notch and a joint as used in sheet metal fabrication. (2 Marks)
9. Organizing a workshop and establishing clear rules and regulations ensures a smooth, productive, and conducive environment for all participants. Outline FOUR workshop rules and regulations. (4 Marks)
10. Work holding devices are essential for securing the material during various processes like cutting, bending, and shaping. State TWO work holding devices in sheet metal. (2 Marks)
11. Understanding sheet metal terms are essential for effectively communicating and executing of sheet metal fabrication processes. Define the following terms: (4 Marks)
 - a. Flanging;

- b. Embossing.
12. Maintaining tools and equipment in a sheet metal workshop is crucial for ensuring safety, efficiency, and longevity of the tools. Outline FOUR ways of maintaining sheet metal tools and equipment's. (4 Marks)

SECTION B: 60 MARKS

*This section consists of **FOUR (4)** questions. Answer **THREE (3)** questions.*

13.

- a. Pattern development in sheet metalwork involves creating flat patterns from shapes, which are then cut and formed into the desired structures. Discuss the **THREE** types of pattern layouts. (6 Marks)
- b. Bending is a critical process in sheet metal fabrication, enabling the creation of complex shapes and structures. Using sketches, explain the following bending operations used in sheet metal:
 - i. Roll bending;
 - ii. Edge bending. (8 Marks)
- c. Final products made from sheet metal are thoroughly examined according to predetermined criteria to ensure that the items meet the required specifications in terms of dimensions and quality. Explain **THREE** methods of inspecting sheet metal products. (6 Marks)

14.

- a. Cutting operations are fundamental techniques used to shape and size metal sheets for various applications. By use of sketches, describe the **TWO** sheet metal cutting operations listed below:
 - i. Blanking;
 - ii. Punching. (10 Marks)
- b. Effective waste segregation and disposal in sheet metal fabrication is crucial for maintaining a safe and environmentally friendly workshop. Outline **FIVE** methods of waste disposal and segregation in a sheet metal workshop. (10 Marks)

15.

- a. Accidents in sheet metal fabrication workshops can occur due to various factors ranging from human error to equipment malfunctions. Discuss **FIVE** preventive measures taken to reduce accidents in a workshop. (10 Marks)
- b. Sheet metal fabrication involves various machines, each designed to perform specific functions essential to transforming flat metal sheets into desired shapes and forms. Describe the function of **FIVE** sheet metal fabrication machines. (10 Marks)

16.

- a. Each type of welded joint is selected based on the requirements of strength, accessibility, and the specific application. Describe FIVE types of welded joints used in sheet metal fabrication. (10 Marks)
- b. Finishing processes enhance the appearance, durability, and functionality of the metal parts. Discuss FIVE finishing processes applied to sheet metal work. (10 Marks)

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