

**073206T4CEN**

**CIVIL ENGINEERING LEVEL 6**

**CON/OS/CET/CC/05/6/A**

**APPLY WORKSHOP TECHNOLOGY PRACTICES**

**July/August 2024**



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

**WRITTEN ASSESSMENT**

**TIME: 3 HOURS**

**INSTRUCTIONS TO CANDIDATE**

1. This paper has two sections A and B.
2. Answer ALL the questions as guided in each section.
3. You are provided with a separate answer booklet.
4. Marks for each question are indicated in the brackets.
5. Do not write on the question paper.

**This paper consists THREE (3) printed pages.**

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

**SECTION A (40 MARKS)**

*Answer ALL questions.*

1. Basic hand tools are commonly used in a workshop while carrying out daily activities. List THREE advantages of using basic hand tools. (3 Marks)
2. An Engineering firm has been tasked with designing the electrical system for a new residential building. The project requires a full understanding of electrical terminologies and principles. Define the following electrical terms.
  - a. Voltage. (2 Marks)
  - b. Current. (2 Marks)
  - c. Electric Circuit. (2 Marks)
3. Daily inspection of electrical equipment's to prevent potential electrical shock incidences are usually carried out in a workshop. State THREE ways you would avoid electrical shock in a workshop. (3 Marks)
4. A Construction Company specializes in building structural steel frameworks for commercial buildings. They utilize welding extensively to join steel beams and columns. List THREE advantages of welding object. (3 Marks)
5. While conducting tests in a workshop, Civil Engineering students encountered several workplace accidents, prompting an investigation into the underlying causes. Outline FOUR causes of accidents in a workshop. (4 Marks)
6. The Institution implemented regular fire drills to enhance workplace safety. State FOUR major objectives of conducting fire drills. (4 Marks)
7. A company operating Woodworking workshop seeks to upgrade their wiring system to meet their growing needs. List any FOUR factors that affect the choice of a wiring system to be used in a workshop. (4 Marks)
8. An institution requires to select material for their new hall furniture. Explain THREE advantages of non – ferrous metals over ferrous metals. (6 Marks)
9. Sheet metal has properties that make it versatile; they can be used with ease in various industrial sectors. State THREE areas where sheet metal can be used. (3 Marks)
10. Precision machining is commonly applied when carrying out various works in Engineering. Explain why precision in machines is conducted. (4 Marks)

**SECTION B (60 MARKS)**

Answer any *THREE* questions.

11. Manual metal arc welding is a process where the arc is struck between an electrode flux coated metal rod and the work piece such that both the rod and the surface of the work piece melt to create a weld.
- a. Explain FIVE functions of coated flux. (5 Marks)
  - b. Discuss THREE types of arc welding processes, stating one advantage and one disadvantage of each. (15 Marks)
12. The aesthetics of carpentry and joinery lies in the use of well-articulated joints.
- a. State FIVE importance of joints in carpentry and joinery. (5 Marks)
  - b. With the aid of sketches, describe the following types of joints;
    - i. A cogged joint. (3 Marks)
    - ii. A forked tenon joint. (3 Marks)
    - iii. A dado joint. (3 Marks)
    - iv. Haunched mortise and tenon. (3 Marks)
    - v. Stopped lap dovetail. (3 Marks)
13. Masonry is a construction method that involves building structures from individual units often laid in and bound together by mortar.
- a. Differentiate between pointing and jointing (2 Marks)
  - b. Explain THREE types of masonry units. (9 Marks)
  - c. With the aid of well labeled sketches, describe THREE types of bonds used in the construction of masonry walls. (9 Marks)
14. A petrol engine can either have a two-stroke system or a four-stroke operation system.
- a. Explain the working of a four-stroke engine system work. (15 Marks)
  - b. Identify FIVE differences between a Petrol and Diesel Engine. (5 Marks)

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