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071906T4AEN**AGRICULTURAL ENGINEERING LEVEL 6****ENG/OS/AGR/CC/02/6/****Perform Workshop Processes and Materials****July/August 2025**

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

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WRITTEN ASSESSMENT**Time: 3 HOURS**

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INSTRUCTIONS TO CANDIDATE

1. This paper consists of TWO sections: A and B.

2. Attempt ALL questions in section A and ANY TWO in section B.

3. Marks for each question are indicated in the brackets.

4. Candidates are provided with a separate answer booklet

5. Do not write on the question paper.

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This paper consists of FIVE(5) printed pages
Candidates should check the question paper to ascertain that all
pages are printed as indicated and that no questions are missing.

SECTION A (40 MARKS)***Attempt ALL the questions in this section.***

1. During repair and maintenance of farm machinery and equipment, welding can be used to join damaged metallic parts. Outline FOUR disadvantages of welding. (4 Marks)
2. A lathe is a machine used in industries to mainly produce cylindrical workpieces. Define the following used in lathe operations. (3 Marks)
 - a. Knurling
 - b. Chamfering
 - c. Undercutting
3. When working in the workshop, it is important to understand the first aid procedures for various types of accidents. Outline FOUR steps to follow when administering first aid for a minor cut on a victim. (4 Marks)
4. Bench work operations require the use of various hand tools in the manufacturing process. State ONE function of each of the following tools. (4 Marks)
 - a. Punch
 - b. Square file
 - c. Taps
 - d. Rubber mallet
5. When cutting material by hand, safety should be maintained to avoid injury. State FOUR safety precautions to observe when using hacksaws. (4 Marks)
6. Secure fabrication process. List FOUR examples of work holding devices in a workshop. (4 Marks)
7. Workshop safety is the protection from risk or harm s or damage to machines and tools in the workshop. State FOUR safety rules to be observed during gas welding. (4 Marks)
8. Welding machinery parts can lead occurrence of fires in the workshop, a hazard that can cause accidents. Describe the following types of fires. (3 Marks)
 - a. Class A fires
 - c. Class C fires
9. Workshop procedure stipulate recording of issuance and receiving of materials, tools and equipment. State FOUR contents of a tool issue and receive record book page in the farm workshop store. (4 Marks)

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10. Forging is defined as the plastic deformation of metals at elevated temperatures into a predetermined size or shape using compressive forces. Outline FOUR advantages of forging as a metal form. (4 Marks)

11. Mechanical properties of metals determine the appropriate type of welding when fabricating to maintain their structural integrity. Differentiate between soldering and brazing. (2 Marks)

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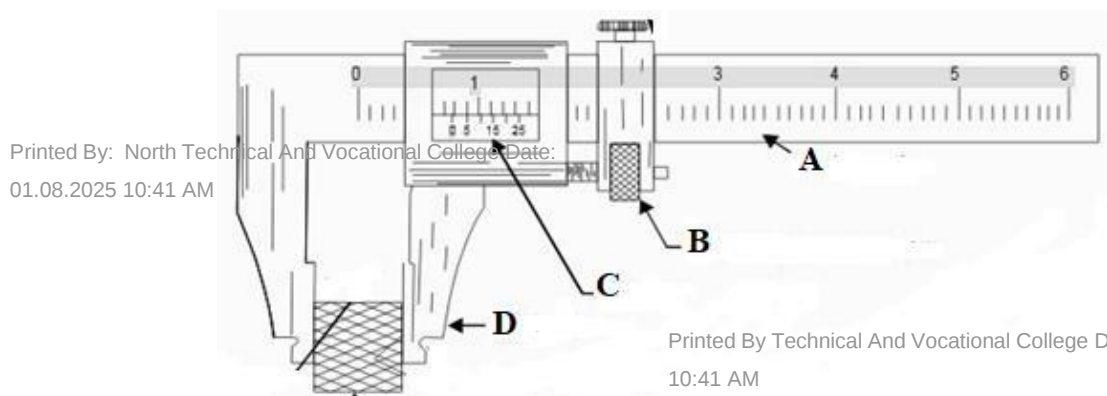
SECTION B (60 MARKS)**Attempt Any THREE Questions in This Section**

12. A drilling machine is a machine found in a gricultural engineering workshop.

- Using a well labelled diagram, describe the main parts of a vertical drilling machine. (10 Marks)
- Describe THREE operations performed on drilling machines. (6 Marks)
- Outline FOUR maintenance practices carried out on a drilling machine. (4 Marks)

13. Hand tools provide efficient means of workshop operating, cutting and fabrication.

- Figure 1 below shows a Vernier caliper. Name the parts labelled A, B, C, and D. (4 Marks)

**Figure 1**

a correct Vernier caliper reading

- Outline FOUR mechanical causes of accidents in the workshop when using hand tools. (4Marks)

- Outline FOUR functions of a try square (4 Marks)

14. Knowledge of properties of engineering materials is essential when undertaking fabrication work in the workshop.

- Outline FOUR factors to consider when choosing the type of a material to use during fabrication. (4 Marks)
- Describe FOUR properties of copper that make it a useful material in engineering work. (8 Marks)

- c. Explain FOUR factors that can contribute to the marketability of a fabricated product. (8 marks)

15. Welding is a fabrication or more parts are fused together by means of heat, pressure or both forming a joint.

- a. Using a well labelled diagram describe the arc welding process. (8 Marks)

- b. Describe FOUR welding defects using sketches. (8 Marks)

- c. Outline FOUR advantages of brazing. (4 Marks)