

**071906T4AEN**

**Agricultural Engineering Level 6**

**ENG/OS/AGR/CC/02/6/A**

**Perform Workshop Processes and Materials**

**July /Aug 2023**



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

**WRITTEN ASSESSMENT**

**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 3 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)**

*Answer all questions in this section.*

1. State FOUR requirements of a good workshop. (4 marks)
2. Name THREE types of grinders. (3 marks)
3. List FOUR types of work holding devices used on a center lathe machine. (4 marks)
4. State FOUR factors considered in locating a farm workshop. (4 marks)
5. Define the following terms as used in welding: (4 marks)
  - a) Purging
  - b) Tinning
  - c) Sweated joints
  - d) Burnt iron
6. Highlight FOUR functions of flux in welding. (4 marks)
7. Outline THREE factors considered before welding (3 marks)
8. A student was given a task in the workshop to perform and instructed to use manual metal arc welding method. The electrode had the following coding on it; E7010 B 160 2 0 H.  
What does E7010 stand for? (3 marks)
9. State ONE function of each of the following marking out tools (4 marks)
  - a) Calipers
  - b) Vernier height gauge
  - c) V-block
  - d) Surface plate
10. Identify TWO properties of cast iron (2 marks)
11. List FIVE objectives of safe practices in an engineering workshop (5 marks)

**SECTION B (60 Marks)**

**Answer ANY THREE questions in this section**

12. a) State FOUR functions of the arc electrode coating. (4 marks)
- b) i) Illustrate an oxyacetylene gas cutting tool and explain how it operates. (8 marks)
- ii) Outline the closing procedure for the oxyacetylene welding equipment. (8 marks)
13. a) State FOUR types of drilling machines (4 marks)
- b) A hole of diameter 20mm is to be drilled on a work piece of 30 mm thickness. If the drill bit rotates at 2400 revolutions per minute, calculate the cutting speed and the time taken to drill the hole if the feed rate is 0.2mm per second. (6 marks)
- c) Describe FIVE factors that affect the cutting speed of a drill bit (10 marks)
14. Outline FIVE safety measures to observe when working with gas welding equipment in the workshop under the following sub-headings
- i. Handling cylinders (4 marks)
  - ii. Safety for reducing valves (4 marks)
  - iii. Safety for the hoses (4 marks)
  - iv. Personal safety (4 marks)
  - v. Safety for nozzles. (4 marks)
15. a) Outline the procedure of striking an arc in electric arc welding (8 marks)
- b) Using diagrams, explain the following types of arc welding joints
- i. Butt joint (3 marks)
  - ii. Corner and tee joints (3 marks)
  - iii. Lap joint (3 marks)
  - iv. Edge joint (3 marks)

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