

071906T4AEN

Agricultural Engineering Level 6

ENG/OS/AGR/CR/01/6/A

Operate Agricultural and Related Production Machinery and Equipment

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. a) Define the term conservational tillage. (1 mark)
b) Highlight FIVE objectives of tillage. (5 marks)
2. Outline THREE functions of the mouldboard plough bottom. (3 marks)
3. Outline FOUR operational differences between a mouldboard plough and a disc plough (4 marks)
4. State THREE functions of a sub-soiler. (3 marks)
5. List any FOUR parts of a rotary tiller. (4 marks)
6. Outline FOUR maintenance practices carried out on boom crop sprayer. (4 marks)
7. Outline FOUR methods for increasing the penetration of a disc harrow. (4 marks)
8. Name FOUR methods of planting crops. (4 marks)
9. Outline FOUR safety precautions observed before and after spraying. (4 marks)
10. Define the term precision planting. (1 mark)
11. List THREE types of furrow openers. (3 marks)

SECTION B (60 Marks)

Answer three questions in this section

12. a) Outline FOUR reasons why the chisel plough is very versatile. (4 marks)
- b) Explain FOUR adjustments carried out on a mouldboard plough to improve working efficiency. (8 marks)
- c) The total draft of four bottom, 35 cm mouldboard plough when ploughing 18cm deep at 5 km/h speed is 1600 kg. If the effective field capacity is 75%.
Calculate:
- i) The unit draft in kg/cm^2 . (2 marks)
 - ii) The actual power requirement in Horsepower. (3 marks)
 - iii) The rate of doing work in ha/hr. (3 marks)
13. a) Illustrate the following disc plough angles and explain the effect of each on the plough performance
- i) Tilt angle (5 marks)
 - ii) Disc angle (5 marks)
- b) Kenyan economy is highly dependent on agriculture. Explain FIVE benefits of mechanization in Kenya. (10 marks)
14. a) Illustrate the parts of a boom crop sprayer. (10 marks)
- b) Explain the functions of FIVE parts of the boom crop sprayer. (10 marks)
15. a) Outline FIVE requirements of a good fertilizer distributor. (5 marks)
- (b) Highlight FIVE requirements for a cell type precision planter. (5 marks)
- (c) With the aid of a diagram, explain the operation of a cup feed seed metering mechanism. (10 marks)

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