

071906T4AEN

AGRICULTURAL ENGINEERING LEVEL 6**ENG/OS/AGR/CR/10/6** **Operate****Agricultural Harvesting Machinery and Equipment**
/December 2025Printed By: Technical And Vocational College
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10:58 AM**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
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Date: 24.11.2025 10:58 AM**WRITTEN ASSESSMENT****Time: 3 HOURS**Printed By: And Vocational College
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AM**INSTRUCTIONS TO CANDIDATE**

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1. This paper consists of **TWO** sections: **A and B**.
2. Answer **ALL** questions in section A and **ANY THREE (3)** questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a **sw er booklet**.
5. Do not write on the question paper.

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This paper consists of THREE (3) printed pages
Candidates should check the question paper to ascertain that all
pages are printed as indicated and that no questions are missing.

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

1. Mowers are primarily for cutting grass but may be used in harvesting cereals like wheat. List FOUR types of cutter bar mower knife sections. (4 Marks)
2. A combine is a machine that "combines" the tasks of harvesting, threshing, and cleaning grain plants. Outline FOUR off-season maintenance practices carried out on a combine harvester. (4 Marks)
3. The pickup baler is designed to pick up hay or straw from a swath or wind row and compress it into bales which are then tied with a twine. State TWO safety devices fitted on a rectangular pickup hay baler. (4 Marks)
4. Conditioning is crucial for hay, as the stems will not dry well if not scraped or cracked to let water out. State ONE use of each of the following machine used in hay conditioning. (4 Marks)
 - a) A tedder machine
 - b) The swath turners
 - c) Roller crushers
 - d) The Crimpers
5. The efficiency of a potato harvester is highly dependent on proper field adjustment to minimize damage and maximize yield. State FOUR adjustments carried out on a potato harvester. (4 Marks)
6. Routine maintenance of agricultural implements increases their lifespan and efficiency. Outline FOUR maintenance practices carried out on forage harvesters. (4 Marks)
7. Post-Operation report is a critical document for farm machinery management, particularly for high-value equipment. State FOUR information found on a post operation report of combine harvesters. (4 Marks)
8. The quality of chopped forage tim and silage fermentation and animal nutrition. Outline FOUR factors that determine the quality of choppings from a forage harvester. (4 Marks)
9. The field performance of a combine harvester is measured by its efficiency, grain quality, and total loss. Outline FOUR factors that affect the performance of a combine harvester. (4 Marks)
10. Performing timely and correct servicing on agricultural harvesting implements is essential for maintaining good field performance and minimizing downtime. List FOUR Servicing tools & equipment for agricultural harvesting machinery. (4 Marks)

SECTION B (60 MARKS)*Attempt ANY THREE questions in this section.*

11. A cutter bar mower is a implement whose operational efficiency and longevity are highly dependent on correct field operation and adjustment.

- a) With the aid of diagram explain the operation of a cutter bar mower. (14 Marks)
- b) Outline SIX maintenance practices carried out on a cutter bar mower. (6 Marks)

12. The functional efficiency of a modern forage harvester is measured by its ability to produce uniformly chopped forage with a high degree of kernel processing, while maximizing throughput and minimizing power consumption and open time.

- a) With the aid of diagram explain the operation of a flail forage harvester. (12 Marks)
- b) Explain FOUR operational adjustments carried out on a flail forage harvester. (8 Marks)

13. The cleaning shoe is a critical subsystem of a combine harvester responsible for separating grain from material other than grain after threshing. Its efficient operation is paramount to minimizing grain loss and ensuring a clean sample in the tank.

- a) Using a diagram explain the operation of the grain cleaning mechanism of a combine harvester. (12 Marks)
- b) Explain FOUR requirements of a good combine harvester operator. (8 Marks)

14. The pickup unit is the first critical interface between the rectangular hay baler. Its efficient operation is essential for gathering the windrow completely and feeding it evenly into the bale chamber, directly influencing bale density and shape.

- a) Using a diagram explain the operation of a pick-up unit of the rectangular hay baler. (14 Marks)
- b) Explain THREE functions of a ram in a rectangular pick-up hay baler. (6 Marks)