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071906T4AEN**Agricultural Engineering Level 6 ENG/OS/AGR/CR/04/6/****Perform Soil and Water Conservation****Activities****July /August 2025**

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

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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 THREE (3) questions 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 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.

SECTION A (40 MARKS)

Attempt ALL the questions in this section.

1. When designing soil conservation structures, it is essential to consider various rainfall characteristics. State FOUR rainfall characteristics to consider. (4 Marks)
2. Dams and weirs are barriers constructed across a river to collect water. Outline FOUR similarities between a weir and a dam. (4 Marks)
3. Terraces are channels with ridges or embankments of earth or stones which are not combined with a channel. Differentiate between broad based terraces and Fanya juu terraces. (2 Marks)
4. Erosion by water is the most significant process that reduces land productivity and sediment deposition that pollutes water sources. Identify THREE stages of soil erosion by water. (3 Marks)
5. Landslide is the movement of a mass of rock, debris, earth, or soil downslope. List THREE factors which can trigger them to occur. (3 Marks)
6. Cover cropping refers to establishment of a crop that spreads out to cover the surface of the soil to provide it with a cover. State FOUR advantages of using cover crops in conservation of soil and water. (4 Marks)
7. Moving wind causes soil particles detachment and also acts as transporting agent for the detached particles. State FOUR factors which determine the erosivity of wind. (4 Marks)
8. An earth dam is designed to impound water or create a reservoir by forming a barrier across a river or other water courses. List FOUR factors to consider while siting a small earth dam. (4 Marks)
9. Water ways are depressions which conduct runoff water safely from hill slopes to valley bottoms where it can join streams or rivers. State FOUR factors which determine the design of water ways. (4 Marks)
10. Soil conservation depends on various structures. Name FOUR soil and water conservation structures that reduce runoff by increasing infiltration. (4 Marks)
11. Water measuring devices are useful in determination of river flow. State FOUR advantages for installing water measuring devices in water supply. (4 Marks)

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

12. Soil and water conservation structures are usually made by hand labour or machinery.

a. Describe FIVE factors which determine the selection and design of soil and water conservation structures. (10Marks)

b. Explain FIVE ways in which tree planting help to conserve soil and water.

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(10 Marks)

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13. Roof catchments refers to the harvesting and storage of rain water in tanks using roofs.

a. Explain SIX considerations one should make to e and sustainable

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(12 Marks.)

b. Describe FOUR considerations which would determine the amount of rain water one would harvest from a roof catchment. (8 Marks)

14. Downstream activities in soil and water conservation refer to measures and practices implemented to manage and protect soil and water resources in areas located further downstream in a watershed or drainage system.

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a. Explain FOUR downstream activities commonly employed in soil and water conservation. (8 Marks.)

b. Explain FOUR types of tools used for soil testing and monitoring for land rehabilitation (8 Marks)

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c. Outline FOUR factors which influence accumulation of surface run off water.

(4 Marks)

15. Microare rain water harvesting system which involves the collection of run-off water and conserving it on the ground for growing crops like bananas or citrus tree crops.

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a. Discuss five types of micro-catchments (10 Marks)

b. Land reclamation is the pro nverting wasteland into farm land for growing

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of crops and keeping of animals. Explain FIVE methods of rehabilitating land according to National Environmental Management Authority. (10 Marks)

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