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**073204T4PLM**

## **PLUMBING LEVEL 4**

**CON/OS/PL/CR/02/4**

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**Install Rainwater Harvesting Systems**

November/December 2025

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

### **WRITTEN ASSESSMENT**

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**Time: 2 HOURS**

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### **INSTRUCTIONS TO CANDIDATE**

1. This paper consists of two sections; **A** and **B**

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2. Answer section **A** and **B**.
3. Marks for each question are as indicated in the paper.
4. You are provided with a separate answer booklet to answer the questions.
5. Do NOT write in this question paper.

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**This paper consists of SIX (6) printed pages**

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**Read and 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 (10 MARKS)

*Answer ALL questions in this section. Each question carries one mark*

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1. A symbol is used at the bottom of the downpipe to show where rainwater is directed away from the wall. Which fitting does this symbol represent.

A. Hopper head.

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B. S

C. Shoe.

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D. Union joint.

2. Which is the recommended slope for gutter installation.

A. 1 mm per meter towards the outlet.

B. 10 mm per meter towards the outlet.

C. 25 mm per meter away from the outlet.

Printed By: Technical And Vocational College Date: 20.11.2025  
09:15 AM 5 mm per meter towards the wall.

3. What is the main function of downpipes in a rainwater harvesting system.

A. Store collected water

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B. Direct water from gutters to storage tanks

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D. Prevent overflow

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4. Which measurement is important when calculating the length of gutters required for a building.

A. Roof area

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B. Perimeter of the eaves

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D. Number of downpipes.

Date: 20.11.2025 09:15 AM **5. What is the primary purpose of a first flush diverter in a rainwater harvesting system.**

- A. To prevent debris from entering the storage tank
- B. To increase water pressure
- C. To filter bacteria from the water
- D. To reduce noise from the system

Printed By: Technical And Vocational College Date: 20.11.2025 09:15 AM **6. Why is it to ensure that gutters hangers are placed at the correct spacing during installation.**

- A. To provide adequate support and prevent falling of gutters
- B. To make the gutters look more decorative.
- C. To reduce the number of brackets used and save money.
- D. To allow the gutters to expand and swing freely.

**7. Which of the following is the most effective way to test the efficiency of a rainwater harvesting system after installation.**

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- B. Measure the water pressure in the taps.
- C. Simulate rainfall using a hose.

Printed B Technical And Vocational College Date: 20.11.2025 09:15 AM **D. Inspect the tanks structural integrity.**

**8. \_\_\_\_\_ is a factor which should be considered when quantifying the size of downpipes.**

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- A. Wall thickness.
- B. Rainfall intensity.
- C. Roof pitch.
- D. Building orientation.

**9. Which activity is considered a good housekeeping practice on a construction site.**

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- B. Properly storing materials and tools after use

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C. Disposing of waste in the work area

D. Ignoring minor spills

10. Not all the rain that falls in the storage tank. Which factor reduces the volume of water harvested from a roof.

A. Debris in gutters

B. Evaporation  
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C. Overflow  
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D. All of the above

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## SECTION B (40 MARKS)

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20.11.2025 *Answer ALL questions in this section.*

11. Working drawings are essential in guiding the installation of rainwater harvesting system. List THREE details that can be obtained from a rainwater harvesting system layout. (3 Marks)  
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12. During the installation of a rainwater harvesting system, different components such as gutters, downpipes, and fittings need to be connected securely to ensure proper flow. State TWO methods of joining rainwater goods. (2 Marks)  
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13. A rainwater harvesting system is expected to channel water efficiently from the roof to the storage or disposal point. List FOUR common defects that may occur in rainwater systems. (4 Marks)
14. Performing functionality tests on gutter system ensures that the system operates efficiently and meets required standards. Mention major tests for gutter leaks. (3 Marks)  
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15. In the installation of rainwater systems, different fittings and components are used. What is the function of a hopper head in a rainwater system. (2 Marks)  
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16. During the installation of rainwater systems, certain hand tools and equipment are needed to fasten and secure gutters in position. List FOUR tools required when fixing gutters on a roof. (4 Marks)  
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17. State that gutters do not overflow during heavy rainfall. (2 Marks)  
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18. In the general maintenance of rainwater systems, certain activities are carried out at regular intervals. State THREE reasons for cleaning gutters e.g (3 Marks)  
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19. State FOUR properties of a good rainwater harvesting system. (4 Marks)
20. When handling metallic rain, different finishing practices are sometimes applied. Name THREE reasons for applying metallic rainwater goods. (3 Marks)  
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21. During the installation of rainwater goods, different fittings are applied to serve specific purposes. Identify the following types of rainwater fittings. (3 Marks)  
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22. On construction sites, different types of waste are generated during installation and maintenance activities. State FOUR importance of segregating waste. (4 Marks)

23. Gutters come in different shapes to suit various roof in water systems. Draw the cross-section of the following gutter profiles.

- Deep half round gutter.
- Half round gutter.
- Square section gutter. (3 Marks)

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