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PLUMBING LEVEL 5

CON/OS/PL/CR/03/5/A

Install Drainage System

Nov/Dec 2024

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

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WRITTEN ASSESSMENT

Time: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. Marks for each question are indicated in the brackets.
2. The paper consists of **TWO** sections: **A** and **B**.
3. Candidates are provided with a separate answer booklet
4. **DO NOT** write on this question paper.

This paper consists of FOUR (4) 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 the questions in this section.

1. To calculate the fall in a section of pipework, you need to apply the gradient ratio to the length of the pipe. Calculate the fall in a 70 m section of foul water pipework if the gradient is to be 1:80. (3 Marks)
2. In plumbing, it is important for a plumber to understand the types of pipes that can be used in the various tasks. Briefly explain the statement citing TWO sizes of pipes that you could choose for a drainage work. (2 Marks)
3. Understanding symbols in architectural drawings is crucial for plumbers for several reasons. State FOUR reasons why it is important for a plumber to understand symbols in architectural drawing. (4 Marks)
4. Correct symbols in plumbing sketches ensure that the design is easily understandable and standardizes communication among the plumbers. Sketch the following symbols as used in drainage systems.
   a) Sink. (2 marks)
   b) Non-return valve. (2 marks)
5. When installing drainage pipes, several types of drawings are essential to ensure proper installation, compliance, and functionality. Name FOUR types of drawings will you require in the field when installing drainage pipes. (4 Marks)
6. Drainage systems can be classified based on several criteria, including their function, design, and installation methods. State TWO classifications of Drainage systems. (2 Marks)
7. Pipes are laid according to levels to ensure the proper functioning and longevity of the system. Highlight THREE reasons why pipes are laid according to levels. (3 Marks)
8. When installing an inspection chamber, various materials and components are required List FOUR materials required when installing an inspection chamber. (4 Marks)
9. As a plumber, to ensure a system's functionality, there are tests that you can carry out. State TWO methods used to conduct a functionality test. (2 Marks)
10. Addressing faults during installation and ensuring proper maintenance can help ensure the efficient and reliable operation of the drainage system. List THREE faults that you expect to find when installing a drainage system. (3 Marks)

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11. As a worker it is important to observe safety and health practices in a workshop. Highlight TWO reasons for doing so. (2 Marks)
12. The drainage system is a critical component in construction projects for several reasons. Highlight THREE importance of a drainage system in construction projects. (3 Marks)
13. When working on drains there are some risks you may encounter. Addressing these risks is crucial to ensuring safety and preventing accidents or health issues. List FOUR risks you would encounter. (4 Marks)

SECTION B (60 MARKS)

Answer Any THREE Questions in This Section

14. It is normal to carry out two soundness tests on drainage system.
    a) Describe how you carry out an air test in sanitary pipe work system. (6 Marks)
    b) Site assessment before installing a drainage system is a critical step. Describe the importance of site assessment before installing a drainage system. (4 Marks)
    c) You are responsible for ensuring that the drainage system meets regulatory requirements. What steps would you take to ensure compliance during installation. (10 Marks)

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15. Observing key safety and health practices in a plumbing workshop based on OSHA regulations is crucial for ensuring a safe working environment and preventing accidents.
    a) Identify FOUR key safety and health practices observed in a plumbing workshop based on OSHA regulations. (4 Marks)
    b) Different soil characteristics have distinct impacts on the design of drainage system. Explain how a soil type influences the design of a drainage system. (2 Marks)
    c) The process of backfilling and making-good of drainage channels is crucial for ensuring the stability, functionality, and longevity of the drainage system. Describe the process of backfilling and making-good of drainage channels. (8 Marks).
    d) Explain how drainage pipe work is protected based on specifications. (6 Marks)

16. You are tasked with installing a drainage system on a sloped site with varying soil types.
    a) Describe the steps you would take to ensure the system is properly installed and functions efficiently. (9 Marks)
    b) You encounter a buried utility line while digging a trench for a drainage pipe. Describe the steps you should take to address this situation safely and effectively. (5 Marks)
    c) Describe the steps involved in troubleshooting a blocked drainage system. (6 Marks)
17. During excavation of a drainage system, each step should be executed with precision to ensure the drainage system functions effectively and the excavation is completed safely and efficiently.
    a) Outline the steps involved in excavation for underground drainage components based on the layout. (4 Marks)
    b) When selecting materials for a drainage system, several factors must be considered to ensure the system's effectiveness. Explain FOUR factors that affect the choice of these materials used in drainage. (8Marks)
    c) Proper curing helps to achieve the desired strength, prevent cracking, and ensure the long-term performance of the system. Describe the curing process of a drainage system as per job requirements. (8Marks)

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