

073206T4BLD

**BUILDING TECHNICIAN LEVEL 6**

CON/CU/BUT/CR/05/6/A

**Execute Substructure Works**

Nov/Dec 2024



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

**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 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)**

*Answer ALL the questions in this section.*

1. Determining the nature of the soil is crucial before foundation design. List THREE reasons why soil investigation is important. (3 Marks)
2. There are various tools and equipment used in setting out. List FOUR equipment used in setting out. (4 Marks)
3. Foundations play an important role in construction. Highlight THREE functions of a foundation. (3 Marks)
4. Strong bases are fundamental when it comes to foundations. State the meaning of 'settlement' in the context of foundations. (2 Marks)
5. Foundation walls are made from various materials. List THREE materials used as foundation walls. (3 Marks)
6. Various activities are conducted during initial stages of construction. Define the following activities. (6 Marks)
  - a. Excavation
  - b. Timbering
  - c. Setting out
7. Settlement is detrimental when it occurs. Highlight FOUR causes of differential settlement in building foundations. (4 Marks)
8. Excavation is done to receive the foundation that will be constructed for a building. Outline FOUR factors that determine the method of excavation to be used in a construction project. (4 Marks)
9. Foundations are used based on various existing factors. Give TWO scenarios where deep foundations can be used. (2 Marks)
10. A foundation requires to be set on a well levelled ground. Explain the cut and fill method as used in ground levelling. (2 Marks)
11. When placing concrete, it's important to consider various factors to ensure compliance with building codes. Identify THREE factors which should be considered when placing concrete. (3 Marks)
12. Safety is paramount during concrete placement to protect workers and ensure the stability of the structure. Highlight TWO safety measures which should be followed when placing concrete. (2 Marks)
13. Several methods can be used to set out the corners of a building. State TWO advantages of using the 3:4:5 method in setting out. (2 Marks)

**SECTION B (60 MARKS)**

*Answer Any THREE Questions in This Section.*

14. A construction company has contracted you to oversee the construction of its new commercial office building. The project is still in its early stages, and excavation for the building's foundation is ongoing.
- Briefly expound on any FOUR factors you would consider before providing supports to the excavation. (8 Marks)
  - Timber is used as one of the material used in timbering during excavation of foundation trenches. Describe the FOUR components of timbering. (8 Marks)
  - Timbering is done differently in different soils. Provide a sketch showing timbering in dry loose soils. (4 Marks)
15. Engineers take into consideration various factors when designing the type of foundations is to be used during construction.
- Foundations can be broadly categorized as shallow and deep foundations. Explain the main difference between shallow and deep foundations citing TWO examples for each. (8 Marks)
  - A solid ground floor typically consists of several layers, each serving a specific function. Describe the functions of any SIX solid ground floor layers. (12 Marks)
16. Dewatering is the process of removing excess water from a construction site.
- Explain FIVE purposes of dewatering in construction projects. (10 Marks)
  - Method used in dewatering depend on various factors. Explain FIVE methods of dewatering. (10 Marks)
17. A four-storey building requires a reinforced concrete foundation. You are tasked with supervision of the project.
- The client wants to purchase reinforcement bars. Explain to the client what is a bar bending schedule. (2 Marks)
  - During concreting process of the foundation, you came across the following terms. Elaborate the meaning of each term. (8 Marks)
    - Workability
    - Segregation
    - Bleeding
    - Honey combing
  - Moisture can access a building through various means potentially causing damage to the structure. Explain FIVE importance of damp proof to a foundation. (10 Marks)