

**073206T4BLD**

**BUILDING TECHNICIAN LEVEL 6**

**CON/OS/BUT/CC/03/6/A**

**Apply Building Materials Science**

**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. Brick load bearing walls should meet specific standards to guarantee the stability of the structure. Outline THREE tests conducted on bricks. (3 Marks)
2. Selection of roofing materials depends on many factors to ensure optimal functionality. Give THREE factors considered when selecting roofing materials in the coastal region. (3 Marks)
3. You have been contracted to paint a wall. Highlight TWO safety practices you would undertake during painting. (2 Marks)
4. Proper production of timber is important to ensure structural integrity in construction projects. Outline THREE steps of timber production for construction. (3 Marks)
5. Various quality tests are conducted on construction materials to assess their different properties. Identify FOUR tests conducted on lime used in mortar mixes. (4 Marks)
6. Choice of a construction material can be influenced by the purpose of a structure. Give FOUR factors to consider when selecting metal alloys for construction of high temperature furnace. (4 Marks)
7. The physical properties of clay play an essential role in determining its suitability for pottery and ceramic tile production. Briefly explain THREE physical properties of clay. (6 Marks)
8. Chemical properties of materials can be affected by harsh environmental factors. State FOUR chemical properties of steel that make it suitable for construction in coastal areas. (4 Marks)
9. Concrete is a mixture of ballast, sand and cement. Highlight THREE mechanical properties of concrete that are essential for constructing a building foundation. (3 Marks)
10. Timber is a type of construction material. Identify THREE physical properties of timber used in construction. (3 Marks)
11. Building stones are the naturally occurring massive, dense rock which can be cut or shaped into blocks. Give THREE properties of a good building stone. (3 Marks)
12. Project scope defines the limits of a construction project. State TWO ways in which the project scope influences the identification of construction materials. (2 Marks)

**SECTION B (60 MARKS)**

*Answer Any THREE Questions in This Section*

13. Bill of quantities is a construction document prepared before the commencement of constructions.
- a. Discuss the process of interpreting bills of quantities and working drawings to ensure the identification of essential construction materials for a project. (10 Marks)
  - b. Explain FIVE importance of bills of quantities in a construction project. (10 Marks)
14. Selection of appropriate construction methods and processes can influence a construction project.
- a. Discuss FIVE effects of using innovative construction techniques in modern construction projects. (10 Marks)
  - b. Explain FIVE consequences of using substandard material in construction. (10 Marks)
15. Destructive tests are methods of testing materials where the material is subjected to forces or conditions that cause it to be permanently deformed.
- a. Explain FIVE destructive tests used in construction industry. (10 Marks)
  - b. Describe the general steps involved in testing of construction materials. (10 Marks)
16. The manufacturing of construction materials is tailored to the specific material being produced.
- a. State any FOUR types of concrete used in construction industry. (4 Marks)
  - b. Explain the procedure of producing fired brick. (16 Marks)