

073206T4BLD

BUILDING TECHNICIAN LEVEL 6

CON/OS/BUT/CC/03/6

APPLY BUILDING MATERIALS SCIENCE

July/Aug 2023



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. The paper consists of **TWO** sections: A and B.
2. Marks for each question are indicated in the brackets.
3. Do not write on the question paper.
4. A separate answer booklet will be provided.

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)

Attempt ALL questions in this section and write answers in the answer booklet provided.

1. Define the following classification of properties of materials and give one example for each.
 - i. Physical properties.
 - ii. Mechanical properties (4 Marks)
2. Identify any **three** types of working drawings (3 Marks)
3. As a building technician you have been tasked to develop the bills of quantities for a proposed project, highlight **four** functions of a bills of quantities to the client. (4 Marks)
4. Construction material selection quality is crucial before construction, highlight any **five** benefits of using quality construction materials. (5 Marks)
5. Briefly describe the following types of construction materials
 - i. Paint
 - ii. Brick
 - iii. Cement (3 Marks)
6. Explain the following tests parameters
 - i. Compression test
 - ii. Impurity test
 - iii. Tensile test (6 Marks)
7. Outline **three** uses of cement as a construction material. (3 Marks)
8. Differentiate between stones and clay bricks when used as building materials. (4 Marks)
9. Jackim a storekeeper at ABC construction company is organizing for a meeting, list **four** safety requirements he needs to tell other workers to observe when handling construction materials. (4 Marks)
10. Superstructure works involves use of various construction materials such as masonry units, identify any **four** tools that would be used together with these construction materials (4 Marks)

SECTION B (60 MARKS)

Attempt any three questions in this section, ALL questions carry equal marks

11. As a building technician you have been tasked to conduct painting exercise in an existing external wall.
- a. Explain **five** the qualities of a good paint. (10 Marks)
 - b. Distinguish between emulsion paint from oil paint. (4 Marks)
 - c. Explain the purposes of the three coats of painting. (6 Marks)
- 12.
- a. Define the following terminologies as applied to clay products
 - i. Bricks.
 - ii. Tiles. (4 Marks)
 - b. Clay bricks are classified based on the quality of the final product. State the characteristics of first-class bricks. (4 Marks)
 - c. Give a brief account on two methods of brick molding. (8 Marks)
 - d. Define Terra cotta and discuss the manufacturing process. (4 Marks)
13. Timber is a versatile and widely used construction material.
- a. Outline four reasons for seasoning of timber. (4 Marks)
 - b. Explain the manufacturing process of the following timber products
 - i. Veneer
 - ii. Plywood. (8 Marks)
 - c. Sketch and label the following types of timber defects;
 - i. Star shake
 - ii. Spray knot
 - iii. Cupping
 - iv. Bowing. (8 Marks)
14. Cement is an essential construction material;
- a. Using a well labelled flow diagram describe the dry process of manufacturing of ordinary Portland cement (10 Marks)
 - b. Explain the purpose of the following test parameters on cement
 - i. Compressive strength test
 - ii. Soundness

- iii. Fineness
- iv. Density
- v. Heat of hydration.

(10 Marks)

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