073206T4BLD

BUILDING TECHNOLOGY LEVEL 6

CON/OS/BUT/CR/05/6

Execute Substructure Works

November/December 2025

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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of THREE (3) printed pages

Candidate 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 questions in this section

1. During excavation, water may accumulate in trenches. Give FOUR methods of dewatering foundation trenches. (4 Marks)
2. Setting out determines the accurate position of the structure on the ground as per drawings. Outline FOUR factors to consider when setting out a building. (4 Marks)
3. There exists various types of foundations in building construction. Differentiate between strip foundation and raft foundation. (4 Marks)
4. Excavation works can pose serious workplace hazards. State THREE safety precautions to observe when carrying out excavation works. (3 Marks)
5. Foundations form the base of structures. Highlight FOUR functional requirements of a foundation. (4 Marks)
6. Working drawings guide construction at different stages. List FOUR working drawings used in substructure works. (4 Marks)
7. Dampness from the ground can weaken foundations. Mention FOUR ways of damp proofing foundations. (4 Marks)
8. Foundation settlements compromise stability of a structure. Identify THREE causes of foundation settlement. (3 Marks)
9. Bonding in foundation walls ensures stability and strength. Highlight FOUR factors that guide the choice of masonry bond for foundation walls. (4 Marks)
10. Timbering prevents collapse of excavation sides. Give THREE safety precautions to be taken during timbering. (3 Marks)
11. Profile boards are temporary works used for setting out. Make a sketch of a double profile board. (3 Marks)

SECTION B (60 MARKS)

Answer any THREE questions in this section

12. As a building consultant, a new client is seeking advice on type of foundation to use in recently proposed construction project.
    a. Explain FIVE factors that determine the choice of a foundation to use. (10 Marks)
    b. Discuss FIVE functions of foundation. (10 Marks)
13. You are hired as a foreman to oversee the concreting of substructure works.
    a. Discuss the steps involved in concreting a strip foundation after leveling of excavation. (8 Marks)
    b. Describe THREE precautions taken during placement of foundation concrete. (6 Marks)
    c. Explain any THREE methods for curing concrete in foundation works. (6 Marks)
14. The engineer in a building construction site engages you as a foreman. To test your knowledge in substructure works, he ask you to:
    a. Explain THREE types of pile foundations. (6 Marks)
    b. Differentiate by use of sketches between deep and traditional mass concrete strip foundation. (6 Marks)
    c. Draw a well labelled diagram of solid ground floor section. (10 Marks)
15. You are supervising a commercial office block project involving excavation of foundation trenches using mechanical equipment and proper trenching practices.
    a. With the aid of a neat sketch, explain the procedure of using boning rods to check levels during excavation of foundation trenches. (12 Marks)
    b. Sketch a well labelled diagram for timbering in dry loose soil. (8 Marks)