



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2014

PROGRAMME: B Ed (Senior Phase and FET)
MODULE: CIVIL TECHNOLOGY EDUCATION 1B
CODE: CTE20B1
TIME: 2 hours
MARKS: 100
EXAMINER: Mr W Engelbrecht
MODERATOR: Dr CF van As

(This paper consists of 3 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions:

1. Answer **all** the questions.
2. You may answer the questions in Afrikaans or English.

QUESTION 1

- 1.1 Briefly explain how you will ensure that your building lines are square when setting them out on a building site by referring to a free hand sketch. (5)
- 1.2 Illustrate how the width and depth of a strip foundation for a half brick wall is determined by referring to a free hand sketch. (5)
- 1.3 You want to build a single storey building with a tiled roof. What is the minimum width and depth specified for the foundations of internal and external walls respectively? (4)
- 1.4 Briefly explain what a batter board or profile board is and what it is used for. (4)
- 1.5 Why should fresh concrete transported in a wheelbarrow be remixed before being placed? (2)
- 1.6 Motivate why concrete placed in foundation trenches should be compacted with a ramming tool or mechanical vibrator. (2)
- 1.7 Why should fresh concrete be placed as soon as possible after mixing? (1)

- 1.8 Briefly explain what determines the height of the foundation wall, and why this is important. (3)
- 1.9 The height of a foundation wall should not exceed a certain height. What is this height, and why is this important? (3)
- 1.10 Briefly discuss the difference between river sand and plaster sand used in mortar mixes. (2)
- 1.11 Briefly explain what is meant by the curing of a concrete floor slab, and why is it important? (3)
- 1.12 Explain two ways in which concrete floor slabs could be cured. (2)
- 1.13 How long should the curing period for a concrete floor slab be? (1)
- (37)**

QUESTION 2

- 2.1 Figure 1 shows a drawing of a Howe truss. Write the numbers in your exam book and name the different parts of the roof construction.

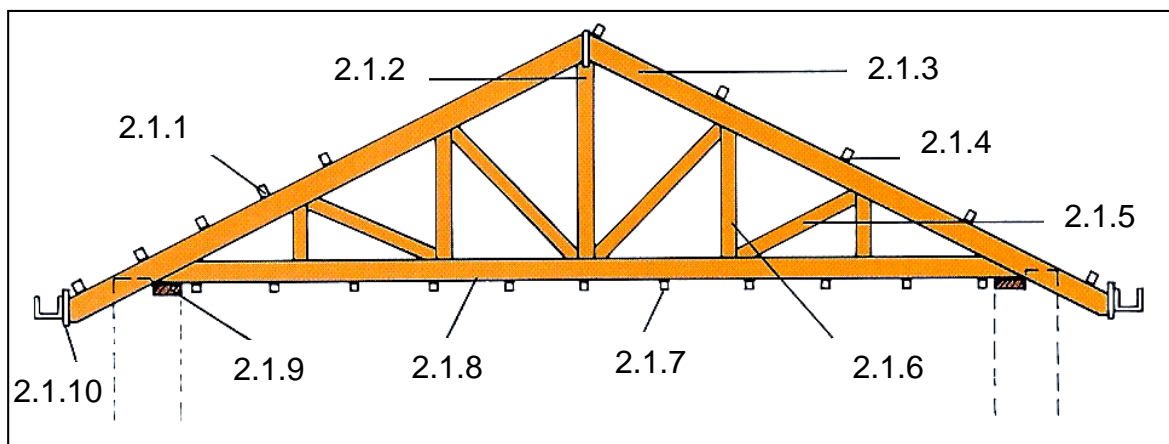


Figure 1: Howe truss

- (10)
- 2.2 Describe what a wall plate is, and what it is used for. (3)
- 2.3 Briefly explain what a wall tie is and what it is used for. (2)
- (15)**

QUESTION 3

- 3.1 Name five safety precautions with regard to using extension ladders. (5)
- 3.2 Describe the procedure for laying the first bricks of a foundation wall. Use free hand sketches to support your answer. (9)
- 3.3 Name five instances where a damp-proof course is used. (5)

- 3.4 What is "brick force", and what is it used for? (3)
- 3.5 Describe how a wooden doorframe is fastened to brickwork. Use free hand sketches to support your answer. (5)
- 3.6 What is a lintel, and what is it used for? (4)
- 3.7 Give the appropriate cement/sand ratio for mortar (dagha) suitable for plastering brick walls. (2)
- (33)**

QUESTION 4

- 4.1 Name the ingredients of concrete. (4)
- 4.2 What is the most important factor determining the strength of concrete? (2)
- 4.3 What is the purpose of the slump test for mixed concrete? (2)
- 4.4 Briefly explain the concept "fresh concrete". (2)
- 4.5 Briefly explain the concept "green concrete". (2)
- 4.6 Discuss why it is sometimes necessary to reinforce concrete, and what is used for this purpose? (3)
- (15)**

TOTAL: 100

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