

073205T4CPJ

CARPENTRY AND JOINERY CRAFTSPERSON LEVEL 5

CON/OS/CAJ/CR/06/5/A

CONSTRUCT TIMBER FLOORS AND PREFABRICATED BUILDINGS

July/August 2024



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

Instructions to Candidate

1. This paper has two sections **A and B**.
2. Attempt questions in each section as per instructions given in the section.
3. You are provided with a separate answer booklet.
4. Marks for each question are indicated in the brackets.
5. Do not write on the question paper

This paper consists of FIVE (5) printed pages

**Candidates should check the question paper to ascertain that all pages are
printed as indicated.**

SECTION A: SHORT ANSWER QUESTIONS (40 MARKS)

(Answer all questions in this section)

1. Safety is paramount in carpentry and joinery work. Explain THREE safety precautions that should be followed when using hand tools in the workshop. (3 Marks)
2. Hand tools can be categorized into various classifications. Identify THREE hand tools that fall under the classification of marking and measuring tools. (3 Marks)
3. Timber is a versatile material used in construction. Describe TWO specific characteristics of timber that make it suitable for constructing floors in prefabricated buildings. (4 Marks)
4. Preservation and protection are key in timber construction. Discuss TWO benefits of applying wood preservatives and fire retardants to timber floors in prefabricated buildings. (4 Marks)
5. Finishing touches enhance the quality of construction. Identify TWO examples of finishing activities carried out after constructing timber floors. (2 Marks)
6. In timber floor construction, strutting serves a vital purpose. Define the term strutting and identify any TWO importance of strutting. (3 Marks)
7. A floor span is 4 meters. Discuss any TWO factors to consider when determining the appropriate size of floor joists for this span. (4 Marks)
8. Transporting large timber panels requires careful planning to prevent damage. Outline THREE appropriate methods for transporting large timber panels. (3 Marks)
9. There are several common types of floor boarding used in construction. Differentiate between solid wood flooring and laminate flooring? (4 Marks)
10. Define the following terms as used in timber floor construction: (3 Marks)
 - i) Wall plate
 - ii) Joists
 - iii) Floorboards
11. Joinery plays a crucial role in timber construction. Outline FOUR traditional joinery methods commonly used in connecting timber floor components. (4 Marks)
12. Timber comes in various grades and types. Identify any THREE common timber species used in constructing timber floors in Kenya. (3 Marks)

SECTION B: EXTENDED ANSWER QUESTIONS (60 Marks)

(Answer question 13 and any other TWO in this section)

13. COMPULSORY: Case Study Question

ABC Construction Ltd. has been contracted to build a small prefabricated office building. The project involves constructing timber floors and erecting prefabricated timber panels. The site is located in an area with a high water table, which presents potential moisture challenges. The building is single-story, with an open-plan office area, a meeting room, and a small storage space. The construction team is tasked with ensuring the structural integrity of the timber floors, providing adequate sound insulation, and maintaining safety standards throughout the project.

The materials selected for the floors include treated pine joists and oak floorboards. Prefabricated wall panels are made from a combination of structural plywood and insulation foam, designed for quick assembly on-site. The company has chosen a floating floor system to enhance sound insulation between rooms.

During the construction process, the team encounters several challenges:

Material Selection: Ensuring the chosen materials can withstand the high moisture levels.

Joist Spacing: Determining the optimal spacing to support both the floorboards and the prefabricated panels.

Sound Insulation: Implementing effective methods to minimize noise transfer between the office and meeting room.

Safety Protocols: Maintaining high safety standards while handling heavy prefabricated panels and installing the floating floor system.

The project manager, John, oversees the site operations and ensures compliance with building codes and safety regulations. He emphasizes the importance of regular safety briefings and the use of personal protective equipment (PPE). The construction team includes experienced carpenters, but some members are new apprentices (Interns) who require additional guidance.

- a) Describe TWO key considerations when selecting materials for constructing timber floors in areas with high moisture levels. (4 Marks)

- b) Describe how closer and wider spacing of joists influences both the stability of the timber floor and the ease of assembling prefabricated panels. (4 Marks)
- c) Outline a safety plan that John could implement to ensure the apprentices handle the prefabricated panels correctly. (4 Marks)
- d) Explain what a floating floor system is and how the use of the system can enhance sound insulation in the office building. (4 Marks)
- e) Evaluate the effectiveness of using prefabricated panels in terms of time efficiency and quality control compared to traditional onsite construction methods. (4Marks)

14. Imagine you are tasked with overseeing the construction of timber floors for a new prefabricated office building. The project involves assembling prefabricated timber panels and constructing the timber floor according to engineer specifications. However, during the installation process, you encounter unexpected challenges related to site conditions and material availability.

- a) Identify TWO potential site conditions that could pose challenges during the construction of timber floors for the prefabricated office building. (2 Marks)
- b) Explain TWO strategies you would implement to mitigate the impact of these site conditions on the construction process. (4 Marks)
- c) Describe TWO scenarios where material availability issues could arise during the construction of timber floors in a prefabricated building project. (4 Marks)
- d) Propose TWO contingency plans to address material shortages or delays and ensure the project stays on schedule. (2 Marks)
- e) Explain TWO quality control measures you would implement to ensure the structural integrity and dimensional accuracy of the timber floors in the prefabricated office building. (4 Marks)
- f) Describe TWO methods for conducting on-site inspections to verify compliance with engineer specifications and industry standards. (4 Marks)

15.a) Discuss TWO methods of attaching floor joists in the construction of timber floors. Provide examples of when each method might be most appropriately used. (8 Marks)

b) highlight any SIX types of materials that can be used to construct prefabricated panels. (6 Marks)

c) Describe the process of constructing a timber floor, highlighting critical aspects like laying floor joists and subflooring. (6 Marks)

16.a) List and describe THREE examples of finishing activities that may be required after constructing a timber floor and prefabricated structure. (6 Marks)

b) Sketch THREE patterns that you can use to install wood parquet on floors. (6 Marks)

c) Describe FOUR tools and equipment used in setting out a building receiving prefabricated panels (8 Marks)

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