

1704/104
CARPENTRY AND CONSTRUCTION
MATERIALS I
June/July 2018
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN BUILDING TECHNOLOGY
MODULE I

CARPENTRY AND CONSTRUCTION MATERIALS I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Scientific calculator/Mathematical tables;

Drawing instruments.

This paper consists of EIGHT questions in TWO sections; A and B.

Answer FIVE questions, choosing THREE questions from section A and TWO questions from section B.

All questions carry equal marks.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 4 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A: CARPENTRY (60 marks)

Answer **THREE** questions from this section.

1. (a) State **four** measures taken to avoid accidents in a workshop. (4 marks)
- (b) Explain **three** reasons for statutory regulations at a workplace. (6 marks)
- (c) (i) List **four** portable power tools and state the use of each. (4 marks)
- (ii) Sketch the following hand tools used in carpentry and joinery: (6 marks)
- I. firmer chisel;
II. dovetail saw;
III. ratchet brace.
2. (a) (i) Sketch the following woodwork joints in pictorial view: (6 marks)
- I. scarf joint;
II. birds mouth.
- (ii) State **four** methods used in strengthening joints in carpentry and joinery. (4 marks)
- (b) Define the following terms as used in timber frame construction: (4 marks)
- (i) stub tenon;
(ii) chamfer.
- (c) Illustrate **two** methods used in treating the edges of a blockboard when used as a table top. (6 marks)
3. (a) (i) List **four** types of materials used in formwork construction. (2 marks)
- (ii) State **eight** functional requirements of formwork. (8 marks)
- (b) With the aid of a sketch describe how a collar roof is anchored on the walls. (10 marks)



4. (a) (i) List **four** materials for fence construction. (2 marks)
- (ii) State **four** factors considered when selecting a particular type of fence. (8 marks)
- (b) (i) List **two** types of materials used in making gutters. (2 marks)
- (ii) With aid of a sketch show how a down pipe is connected to a rainwater shoe anchored on a blockwall. (8 marks)
5. (a) (i) List **four** types of finishes applied on timber walls. (2 marks)
- (ii) State **four** advantages of using timber as a ceiling. (8 marks)
- (b) (i) State **two** aspects to be considered when using woodwork machine. (2 marks)
- (ii) Outline **two** uses of each of the following types of woodworking machines:
- (I) thickness;
- (II) bandsaw. (8 marks)

SECTION B: CONSTRUCTION MATERIALS (40 marks)

Answer TWO questions from this section.

6. (a) Describe the formation of the following types of rocks:
- (i) igneous;
- (ii) metamorphic;
- (iii) sedimentary. (6 marks)
- (b) State **three** advantages of kiln seasoning of timber. (6 marks)
- (c) With the aid of sketches describe the following types of defects in timber:
- (i) heart shake;
- (ii) cup shake;
- (iii) bowing;
- (iv) cupping. (8 marks)

7. (a) (i) List six clay products used as construction materials. (3 marks)
- H₂O absorption of H₂O
laying bricks w/ mortar
- (ii) State four advantages of clay bricks over other walling materials. (8 marks)
- (b) (i) Describe the composition of the following types of alloys:
- I. steel;
 - II. bronze;
 - III. brass.
- (6 marks)
- (ii) Describe quenching as heat treatment method. (3 marks)
8. (a) (i) Describe the following types of portland cement:
- I. rapid hardening;
 - II. white cement.
- (4 marks)
- (ii) State four uses of lime in construction. (8 marks)
- (b) Describe four factors affecting strength of concrete. (8 marks)
- Silica - sand
Alumina

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