

1704/104  
CARPENTRY AND CONSTRUCTION  
MATERIALS I  
June/July 2019  
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;*

*Drawing instruments.*

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

*Answer 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

Answer **THREE** questions from this section.

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1. (a) State **four** measures taken to prevent accidents when carrying hand tools. (4 marks)
- (b) List **four** portable carpentry power tools stating the use of each. (4 marks)
- (c) With the aid of sketches, outline **three** features of **three** hand tools used when making a mortise and tenon joint. (12 marks)
2. (a) Sketch **two** joints in each of the following classifications stating the use of each: (10 marks)
- (i) widening;
- (ii) lengthening.
- (b) Outline **two** factors that influence the holding power of nails. (3 marks)
- (c) State **three** advantages of plywood over solid wood. (3 marks)
- (d) Define each of the following terms used in woodwork: (4 marks)
- (i) splaying;
- (ii) housing.
3. (a) (i) Outline **two** qualities of formwork that influence the characteristics of finished concrete. (6 marks)
- (ii) Outline **two** materials used for making formwork. (6 marks)
- (b) Sketch and label a section through a closed collar roof stating the functions of **four** members. (7 marks)
- (c) Sketch and label each of the following types of foundations and state where each may be used. (7 marks)
- (i) strip;
- (ii) pad.



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4. (a) (i) Define the term parquetry. (6 marks)
- (ii) Sketch **two** patterns of parquetry. (9 marks)
- (b) With the aid of a labelled sketch, outline the procedure of finishing a masonry wall with blockboard panels. (5 marks)
- (c) (i) Outline **two** devices used for fixing timber frame construction members. (8 marks)
- (ii) Explain **one** method of timber frame construction. (6 marks)
5. (a) Describe each of the following wood working machines and state **two** uses of each: (8 marks)
- (i) jig saw; *- wood for cutting wood that is hard*
- (ii) surface planer. (6 marks)
- (b) Outline **four** carpentry workshop equipment. *- chisel, hammer, clamp, wood* (6 marks)
- (c) Outline the components of the unit cost of furniture. (6 marks)

### SECTION B: CONSTRUCTION MATERIALS

*Answer TWO questions from this section.*

6. (a) (i) Outline **three** construction elements in a building. *- roof, - foundation* (6 marks)
- (ii) State **two** materials used for constructing the elements in (i) above. *- stones, - timber* (4 marks)
- (b) Outline the formation of **two** types of rock. *- metamorphic, - igneous* (5 marks)
- (c) (i) State the aim of seasoning timber. *-> Propping the moisture in the timber* (5 marks)
- (ii) Outline **two** methods of seasoning timber. *air seasoning, dry stacking* (5 marks)
- (d) With the aid of a sketch, explain the radial method of converting timber and state **two** uses of timber obtained. (5 marks)



7. (a) (i) List **two** clay products and state where each is used.  
*bricks*  
*tile*
- (ii) Outline the manufacturing process of clay products.  
*→* (8 marks)
- (b) Differentiate between hardness and toughness for metals. *Hardness is the bonds that attach. Toughness is the molecular structure of the metal.* (4 marks)
- (c) (i) Define the term 'heat treatment'.  
*This method where by heat is used to form different structures by use of metals.*
- (ii) Explain **two** heat treatment processes. (8 marks)
8. (a) State **two** uses of each of the following in construction:
- (i) lime;
- (ii) gypsum; (3 marks)
- (b) Outline **four** properties of cement. (6 marks)
- (c) (i) Explain the term 'hydration of cement'.
- (ii) Explain the concrete manufacturing process. (11 marks)

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