

1704/204  
BUILDING SERVICES, JOINERY  
AND CONSTRUCTION MATERIALS II  
June / July 2023  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN BUILDING TECHNOLOGY

MODULE II

BUILDING SERVICES, JOINERY AND CONSTRUCTION MATERIALS II

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 THREE sections A, B and C.*

*Answer FIVE questions choosing TWO questions from section A, TWO questions from section B and ONE question from section C.*

*All questions carry equal marks.*

*Maximum marks for each part of a question are as shown.*

*Candidates should answer the questions in English.*

**This paper consists of 4 printed pages.**

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



## SECTION A: BUILDING SERVICES

Answer **TWO** questions from this section.

1. (a) (i) Define welding. (2 marks)
- (ii) Name and state the use of **four** personal protective gears that are used in a welding workshop. (6 marks)
- (b) Describe the following:
- (i) direct cold water supply system;
- (ii) indirect cold water supply system. (6 marks)
- (c) Sketch and label a direct hot water system. (4 marks)
- (d) Name **two**:
- (i) soil appliances;
- (ii) waste appliances. (2 marks)
2. (a) With the aid of a labelled sketch, describe a soak pit. (6 marks)
- (b) (i) State **four** ways of detecting a gas leak.
- (ii) Outline the safety procedure to follow in the event of a gas leak. (8 marks)
- (c) State any **four** compounds used in fire extinguishers giving the type of fire that each is used to extinguish. (6 marks)
3. (a) Explain **three** reasons for ventilation. (6 marks)
- (b) With the aid of sketches describe the following natural ventilation systems:
- (i) single sided ventilation;
- (ii) cross flow ventilation;
- (iii) stack ventilation. (9 marks)
- (c) Sketch the electrical symbols for the following:
- (i) switch;
- (ii) fuse;
- (iii) earth electrode;
- (iv) transformer. (2 marks)



- (d) Sketch and label a ring circuit system. (3 marks)

### SECTION B: JOINERY

*Answer TWO questions from this section.*

4. (a) Sketch and label a section through a typical timber stair. (6 marks)
- (b) Describe the following forms of partitions:
- (i) timber stud partition;
  - (ii) paramount dry partition;
  - (iii) metal partition.
- (9 marks)
- (c) Sketch and label a pictorial drawing of a typical haunched mortise and tenon corner joint. (5 marks)
5. (a) Sketch and label a four paneled door. (5 marks)
- (b) Outline the procedure of fitting a mortise lock to a door. (8 marks)
- (c) Sketch the following types of wood nails:
- (i) common nail;
  - (ii) lost head nail;
  - (iii) panel pin;
  - (iv) tack.
- (4 marks)
- (d) Differentiate between a varnish and stain. (3 marks)
6. (a) (i) Describe the steps to be followed when preparing a timber surface for application of a finish. (9 marks)
- (ii) Outline the procedure to be followed when applying a stain by brush. (5 marks)
- (b) Use sketches to differentiate between horizontal and vertical pivot hung sash windows. (6 marks)



## SECTION C: CONSTRUCTION MATERIALS II

Answer *ONE* question from this section.

7. (a) Describe the following plastic manufacturing processes:
- (i) 3D printing;
  - (ii) rotational moulding;
  - (iii) injection moulding.
- (6 marks)
- (b) (i) State **three** advantages of synthetic rubber.
- (ii) List **four** uses of synthetic rubber.
- (5 marks)
- (c) Describe the following types of paint:
- (i) Oil paint;
  - (ii) enamel paint;
  - (iii) emulsion paint.
- (9 marks)
8. (a) (i) Define a sealant.
- (ii) Outline **three** functions of a sealant in construction.
- (iii) Name **six** types of sealants.
- (8 marks)
- (b) Describe the following fibrous materials used in construction and state **two** properties of each:
- (i) steel fibres;
  - (ii) carbon fibres;
  - (iii) glass fibres.
- (12 marks)

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