

2707/303

**BUILDING CONSTRUCTION III AND
TRANSPORTATION ENGINEERING II**

Oct./Nov. 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN CIVIL ENGINEERING

MODULE III

BUILDING CONSTRUCTION III AND TRANSPORTATION ENGINEERING II

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Scientific calculator.

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

Answer any FIVE questions choosing at least TWO questions from section A, TWO questions from section B and ONE other question from either section.

All questions carry equal marks.

Maximum marks for each part of a question are as indicated.

Candidates should answer the questions in English.

This paper consists of 3 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: BUILDING CONSTRUCTION III

Answer at least TWO questions from this section.

1. (a) State **three** factors considered when selecting materials for floor finish. (3 marks)
- (b) Outline the procedure for laying terrazzo over a new concrete slab. (8 marks)
- (c) Sketch and label a vertical section through a concrete wall clad with a thin stone slab. (4 marks)
- (d) Sketch and label an elevation of a framed and braced match boarded door. (5 marks)
2. (a) State **three** safety precautions to be observed when painting. (3 marks)
- (b) Explain the following steps applied to painting wooden surfaces:
 - (i) surface preparation;
 - (ii) knotting;
 - (iii) priming;
 - (iv) stopping. (8 marks)
- (c) Sketch and label an independent timber scaffold. (5 marks)
- (d) Outline the tuck pointing procedure. (4 marks)
3. (a) State **three** advantages of bay windows. (3 marks)
- (b) Sketch and label a section through a straight flight timber stair supported on stringers. (8 marks)
- (c) Explain the following methods of demolition:
 - (i) pusher arm demolition;
 - (ii) demolition ball technique. (4 marks)
- (d) With the aid of sketches, differentiate between raking shore and flying shore. (5 marks)
4. (a) (i) List **four** fixtures found in the kitchen.
- (ii) State **three** uses of ceilings in buildings. (5 marks)
- (b) Outline the procedure of plastering a masonry wall. (5 marks)
- (c) With the aid of a labelled sketch explain the pit method of underpinning to deepen existing foundation. (5 marks)

- (d) Sketch and label a section through a timber form work for a beam. (5 marks)

SECTION B: TRANSPORTATION ENGINEERING II

Answer at least TWO questions from this section.

5. (a) Outline the setting out procedure of an earth road. (5 marks)
- (b) With the aid of a labelled sketches, differentiate the forms of gravel road construction. (9 marks)
- (c) A 6.00 m wide carriage way is to be provided with a gravel surface to a uniform thickness of 10 mm. A 10 tonne truck is available for the works and the density of gravel is $1,750 \text{ kg/m}^3$. If on compaction the shrinkage factor is 0.85, determine the dumping interval. (6 marks)
6. (a) Outline **four** methods of soil stabilization. (6 marks)
- (b) (i) Explain the surface dressing procedure in road construction.
- (ii) State the **three** forms of conducting surface dressing. (5 marks)
- (c) (i) Describe the **three** forms of cut back bitumen.
- (ii) Distinguish between prime and tack coats as used in bituminous surfacing. (9 marks)
7. (a) Explain **three** factors that affect dredging works. (6 marks)
- (b) Describe the following:
- (i) **two** classes of road maintenance works;
- (ii) the maintenance process for a pot hole. (7 marks)
- (c) With the aid of labelled sketches, differentiate between expansion and contraction joints in rigid pavements. (7 marks)
8. (a) Explain **three** sources of funds for labour based road construction. (6 marks)
- (b) Sketch and label a railway cross section in a cutting. (6 marks)
- (c) With the aid of a sketch, describe the CBR test for sub grade soils. (8 marks)

THIS IS THE LAST PRINTED PAGE.

