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 cladded 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 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)

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