

2707/303

**BUILDING CONSTRUCTION III AND
TRANSPORT ENGINEERING II**

June/July 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN CIVIL ENGINEERING
MODULE III**

BUILDING CONSTRUCTION III AND TRANSPORT ENGINEERING II

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

- answer booklet;*
- drawing paper size A3;*
- drawing instruments;*
- scientific calculator.*

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

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

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: BUILDING CONSTRUCTION III

Answer at least TWO questions from this section.

1. (a) State **six** functions of cladding panels in a framed structure. (6 marks)
water, thermal appearance
- (b) Sketch and label an undersill precast concrete cladding panel. (8 marks)
- (c) State: *curb*  (6 marks)
- (i) **three** functions of a ground floor;
- (ii) **three** functions of floor screed.
2. (a) (i) State **four** requirements of formwork. (4 marks)
strong, watertight, smooth, durable
- (ii) Sketch and label a climbing formwork. (5 marks) 
- (b) State **two** situations where shoring may be required. (2 marks)
- (c) (i) Define the following as applied in stairs:
- (I) rise; 
- (II) landing; 
- (ii) Describe **two** types of stairs. (9 marks)
half turn stairs, quarter turn stairs
3. (a) State:
- (i) the **main** objective of underpinning; *transfer of load*
- (ii) **three** reasons for underpinning. (3 marks)
- (b) Sketch and label jack pile underpinning method. (7 marks)
- (c) Outline **two** types of defects in paints. (4 marks)
- (d) Describe the procedure of preparing a plastered surface for painting. (6 marks)

4.

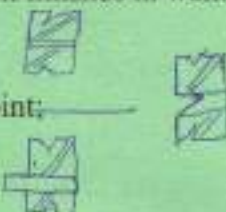
(a) Differentiate between jointing and pointing. *During construction After* (4 marks)

(b) Sketch the following joint finishes in walls:

(i) flush joint;

(ii) weather struck joint;

(iii) tuck joint.



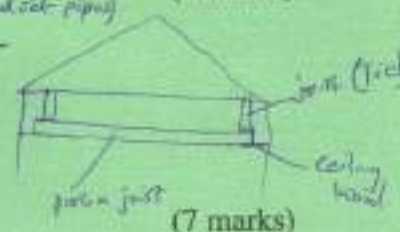
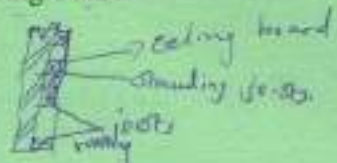
(3 marks)

(c) State six reasons for suspended ceilings in building design.

*- Appearance (good) Create space for service construction (conduit pipes)
- Thermal insulation etc. enhance room to prevent dust.*

(d) Sketch and label the support of a ceiling board:

- (i) at the wall perimeter;
(ii) at the centre.



(7 marks)

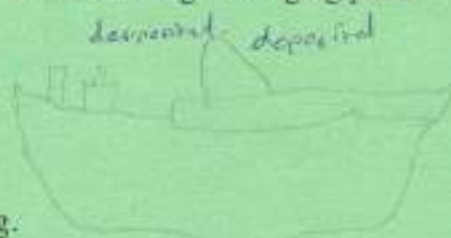
SECTION B: TRANSPORT ENGINEERING II

Answer at least TWO questions from this section.

(a) Describe two methods of pretreatment in a dredging process. *Coarse silt Fine silt* (6 marks)

(i) State two factors to be considered when selecting a dredging plant.

(ii) Sketch and label a bucket dredger.



(5 marks)

(c) State three functions of surface dressing.

(d) Describe the procedure of surface dressing.

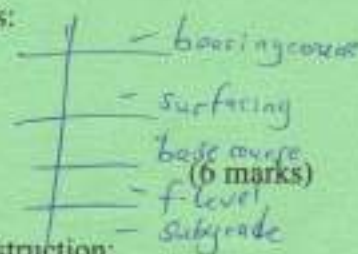
(3 marks)

(6 marks)

6. State three functions of each of the following railway track components:

(a) ballast;

(b) sleepers.



(6 marks)

(b) Sketch and label the following junctions used in a rail track construction:

(i) tandem turnouts;

(ii) diamond crossing.



(10 marks)

(c) Describe two factors that affect the choice of a railway gauge.

(4 marks)

7. (a) With the aid of sketches, distinguish between flexible and rigid pavements. (6 marks)
- (b) State six factors that determine the choice of a road excavation plant. (6 marks)
- (c) Describe the following airport furniture and state their functions:
- (i) airport beacon;
 - (ii) threshold lights;
 - (iii) airport markings;
 - (iv) in runway lights.
- (8 marks)
8. (a) State:
- (i) **four** advantages of labour based road construction.
 - (ii) **three** procedures of sourcing funds for labour based road works.
- (7 marks)
- (b) Explain two engineering properties that are improved by soil stabilisation methods. (5 marks)
- (c) With the aid of a sketch describe the bituminous penetration test. (8 marks)

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