



Machakos University College

(A Constituent College of Kenyatta University)

University Examinations 2013/2014

SCHOOL OF ENGINEERING

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

Diploma in Civil Engineering (Year II)

GBC II/Civil Engineering Construction/Transport ENG. I

Date: 27/3/2014

Time: 8:30

Instructions

1. This paper consists of Eight Questions in two sections A , B & C
2. Answer Five Questions taking at least Three questions from Section A and One question from Section B and One Question form Section C

SECTION A: ANSWER THREE QUESTIONS.

1. (a) State six advantages of hollow pot upper floor construction. (6 marks)
(b) Sketch and label THREE types of single roof construction. (14 marks)
2. (a) Highlight five factors which influence the choice of upper floor precast concrete units. (10 marks)
(b) Explain Five functional requirements of roof construction. (10 marks)
3. (a) Sketch and label a typical timber pitched roof truss. (8 marks)
(b) Make a neat sectional sketch of a suspended timber ground floor. (12 marks)
4. (a) Sketch and label a vertical section through a concrete flat roof showing the method of water proofing (8 marks)

- (b) Describe THREE types of roof covering materials (9 marks)
- (c) Explain the term honey-comb sleeper walls as used in suspended timber ground floors. (3 marks)

SECTION B: CIVIL ENGINEERING CONSTRUCTION

ANSWER AT LEAST ONE QUESTION FROM THIS SECTION.

- 5. (a) State five functions for Backot in railways. (5 marks)
- (b) What are the requirements of an ideal sleeper. (3 marks)
- (c) Using suitable sketches show the three main types of traditional breakwaters. (6 marks)
- 6. (a) Using suitable sketches show the four main classes of different in a tunneling. (12 marks)
- (b) State three favorable requirements of foundations. (3 marks)
- (c) Sketch a fish plats. (5 marks)

SECTION C: TRANSPORT ENGINEERING I

- 7. (a) outline the history of :-
 - (i) Roads (4 marks)
 - (ii) Railways (4 marks)
- (b) Describe the characteristics of
 - (i) John Mack adam roads (4 marks)
 - (ii) Thomas Telford roads (4 marks)
- (c) Sketch the cross-section of the road designed by John Mackdam. (4 marks)
- 8. (a) Briefly describe two factors that affect design elements of a road.. (6 marks)
- (b) Define the following terms as is applied in high way design.
 - (i) Average daily traffic
 - (ii) Current traffic
 - (iii) Increase in traffic
 - (iv) Generated traffic
 - (v) Development traffic
 - (vi) Traffic capacity

- (vii) Traffic density
 - (viii) Basic capacity
 - (ix) Spot speed (5 marks)
- (c) Differentiate between flexible and rigid pavements as applies to highway engineering. (5 marks)
- (d) Outline 4 advantages of concrete pavements. (4 marks)