



# Machakos University College

(A Constituent College of Kenyatta University)

University Examinations 2013/2014

SCHOOL OF ENGINEERING

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**Diploma in Building Technology Module III**

**General Building Construction III**

**Drawing III**

**Services III**

Date: 20/3/2014

Time: 8:30 – 11.30

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## Instructions

1. This paper Consists of Eight Questions in Sections A B and C
2. Answer three questions from Section A One Question from Section B and One question from Section C
3. All Questions carry equal marks as indicated.

## SECTION A: BUILDING TECHNOLOGY

1. (a) Define a stair and give its functions. (4 marks)  
(b) Explain the following terms used in a stair  
(i) Staircase  
(ii) Rise  
(iii) Riser  
(iv) Tread/Going (8 marks)  
(c) In a building used for domestic purpose the floor height is 2000 mm, the rise is 180mm and the horizontal is 2700 mm. Design for a minimum number of treads, risers. (8 marks)
2. (a) Define shoring. (3 marks)  
(b) Explain 3 methods of shoring. (9 marks)

- (c) Dead shores does which role in buildings. (8 marks)
3. (a) Explain why demolitions are done. (8 marks)
- (b) Describe four methods of demolition. (12 marks)
4. (a) Define Formwork (4 marks)
- (b) Make a neat sketch for beam and slab formwork. (16 marks)

### SECTION B: DRAWING III

#### ANSWER ANY ONE QUESTION FROM THIS SECTION

- 5 A pad foundation is to have the following specifications;

To a scale of 1:20, draw a plan and section of the pad foundation showing all reinforcement details.

- Column size 400 x 400
- Pad foundation size – 1200 x 1200 mm
- Reinforcement – Main bars – 16mm @ 200mm c/c  
Links – 8mm @200mm c/c
- Blinding – 50mm
- Cover to reinforcement – 50mm
- Number of bars in column 4No
- Height of stub column – 1,000mm
- Depth of column base – 400 mm
- Assume any other information

6. (a) Figure1 shows the elevation of a trussed roof. To a scale of 1:10, draw the details of the joints labeled A and B, clearly indicating the gusset plates, bolts and members (10 marks)

- (b) Figure 2 shows the plan of a suspended concrete slab with edge fixity as shown

To a scale of 1:20, detail the reinforcement arrangement given the following details (plan & section)

Main reinforcement Y12-01-200B1 : Y12-03-200T1  
Distribution steel Y10-02-200B2; Y10-04-200T2  
Slab Thickness – 150mm  
Beams 200 x 450

## SECTION C- BUILDING SERVICES

### ANSWER ONE QUESTION FROM THIS SECTION

7. (a) Describe how direct cold water system works. (5 marks)
- (b) Sketch the system for direct and indirect cold system. (5 marks)
- (c) Explain five principles of good drainage. 10 marks)
8. (a) Describe the combined system of sanitary appliances and state 2 advantages and 1 Disadvantage. (10 marks)
- (b) Explain direct hot water system. (10 marks)