Name:_____ Index No:_____

Candidate's Signature:_____

Date:_____

2307/305
MEASUREMENT, ESTIMATING AND COSTING
Oct./Nov. 2014
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN CIVIL ENGINEERING

MEASUREMENT, ESTIMATING AND COSTING

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of examination in the spaces provided above.
You should have the following for this examination:
Dimension papers and a pocket calculator;
A copy of the Standard Method of Measurement of Building and Associated Civil Works for EAstern Africa;
A copy of the Civil Engineering Standard Method of Measurement (CESSM).
*This paper consists of **SIX** questions in **TWO** sections; **A** and **B**.*
*Answer **FOUR** questions choosing **TWO** questions from each section in the spaces provided in this question paper.*
Questions in section A carry 30 marks each while those in section B carry 20 marks each.
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

For Examiner's Use Only

Section	Questions	Maximum Score	Candidate's Score
A		30	
		30	
B		20	
		20	
		Total Score	

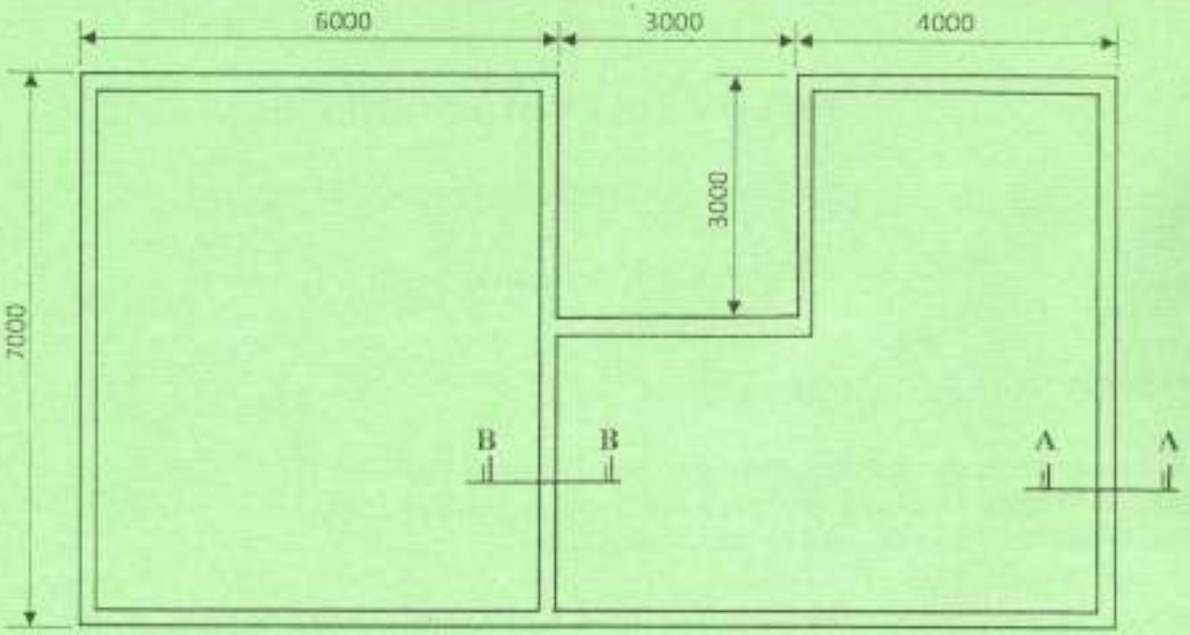
This paper consists of 12 printed pages.
Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

Turn over

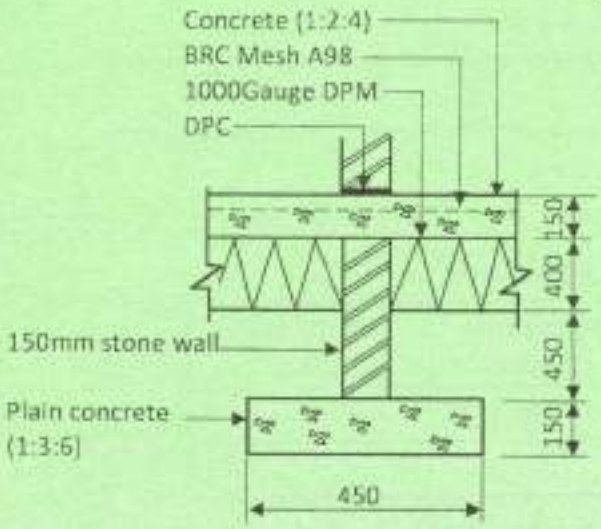
SECTION A: MEASUREMENT

*Answer any **TWO** questions from this section.*

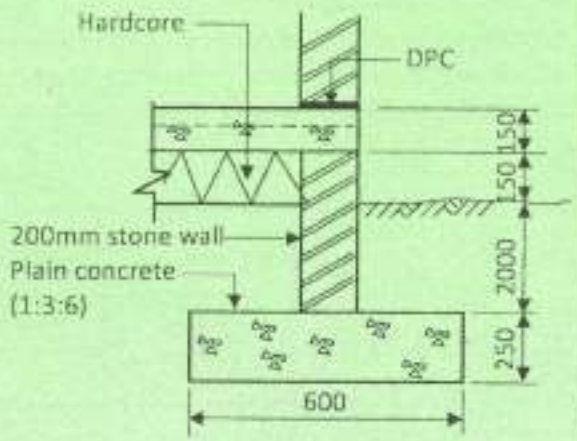
1. Take off all quantities for the substructure works shown on drawing No. 01 upto and including damp proof course. (30 marks)
(USE SMM)



PLAN



SECTION B-B

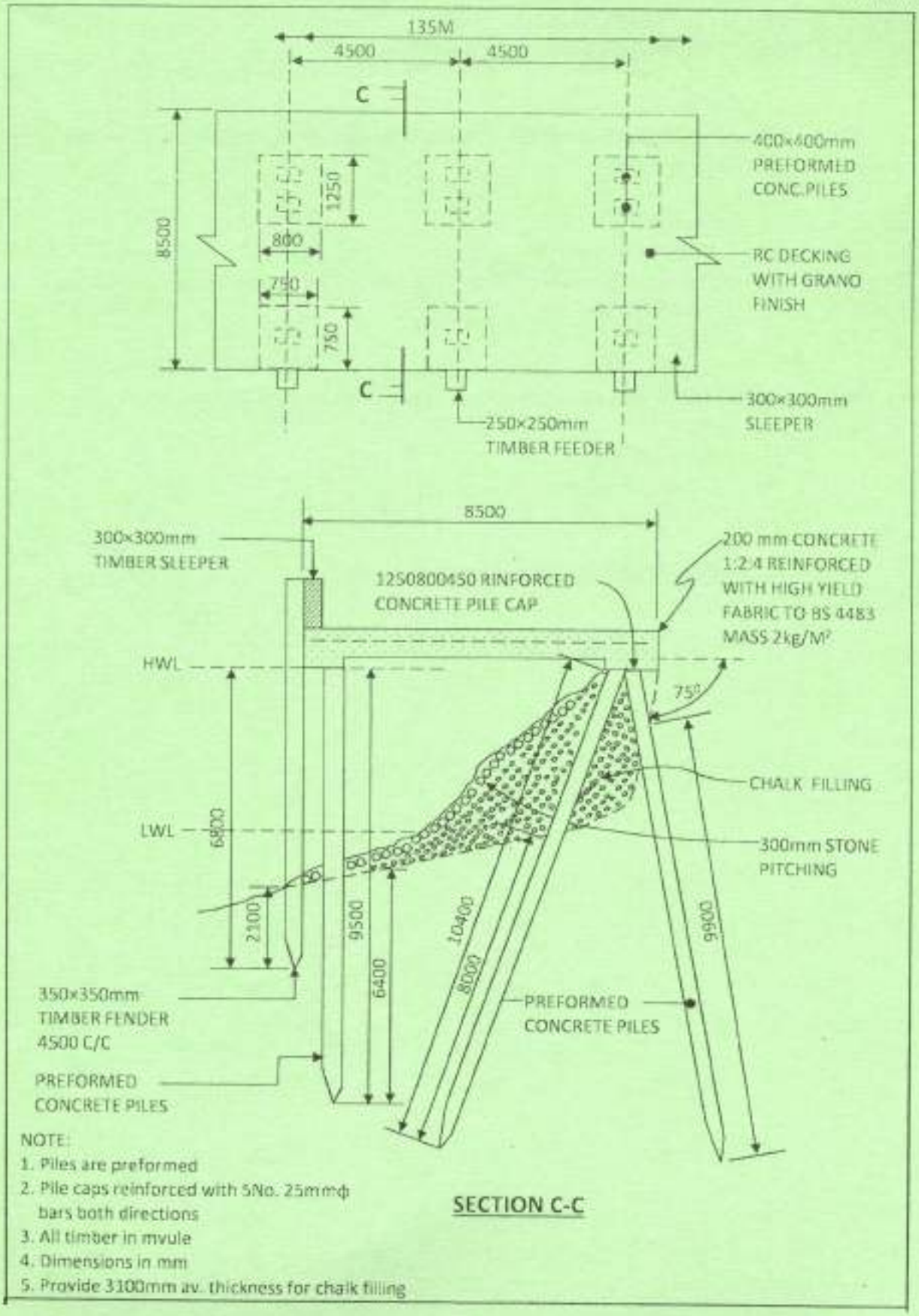


SECTION A-A

Note:
- Top soil 150mm average depth to be preserved on site
- Rock exists 750mm below ground level
- Site is clear

2. Drawing No.02 shows the plan and section of a quay. Using the Civil Engineering Standard Method of Measurement (CESMM) take off all quantities for the works.

(30 marks)



NOTE:
1. Piles are preformed
2. Pile caps reinforced with 5No. 25mmϕ bars both directions
3. All timber in mvule
4. Dimensions in mm
5. Provide 3100mm av. thickness for chalk filling

SECTION C-C

3. (a) Briefly describe the following types of contracts:

(i) Lumpsum contracts;
(ii) Cost reimbursement;
(iii) Bill of approximate quantities.

(9 marks)

(b) Using hypothetical examples, explain how each of the following items can be booked in a dimension paper.

(i) Spot items;
(ii) Extra over items;
(iii) Provide a p.c sum of Ksh 1,200,000 for reinstatement of road by the nominated subcontractor.

(12 marks)

(c) Outline **three** uses of a Bill of Quantities to each of the following:

(i) Resident engineer;
(ii) General Foreman.

(6 marks)

(d) Distinguish Tender sum from Contract sum.

(3 marks)

SECTION B: ESTIMATING AND COSTING

*Answer any **TWO** questions from this section.*

Use the data given in Appendix 'A' for price build up.

4. (a) Build up a unit rate for;

"Excavate vegetable soil 150 mm deep, wheel and spread on site in layers not exceeding 150 mm thick." (6 marks)

(b) Using hypothetical examples price for the preliminary item namely temporary power supply. (5 marks)

(c) (i) Define the term 'Labour constant".

(ii) Outline five factors to be considered before assessing the mark up in a tender. (9 marks)

5. Using the data given, build up unit rate for:

"Dense concrete blockwork, thickness 150 - 250mm vertical straight walls' (as per CESMM). (20 marks)

6. (a) Highlight the difference between Civil Engineering Standard Method of Measurement and Standard Method of Measurement of Building and Associated Civil works for Eastern Africa. (6 marks)

(b) 'It is unlikely that quotation from different contractor will be the same although based on the same specification'. Explain **five** factors which may give rise to such difference. (10 marks)

(c) State **eight** factors affecting owning cost when pricing mechanical plant. (4 marks)

APPENDIX 'A'

GENERAL INFORMATION

Skilled Labour per hour	-	Ksh 85.00
Unskilled Labour per hour	-	Ksh 47.50
Cost of materials is as delivered to site		
Make reasonable assumptions where necessary		
Overhead and profit		25%

BLOCK WALL

Purchase price of 300 litre capacity mixer----------	Ksh 350,000
Economic working life of mixer ----------	5 years
Insurance of mixer per annum ----------	Ksh 10,000
Cost of 425 mm long by 225 mm thick dense concrete block per piece ----------	Ksh 55.00
Haulege to and from site per annum ----------	Ksh 30,000
Interest on capital per annum ----------	Ksh 15% of capital cost
Salvage value of mixer ----------	Kshs