2306/304
MEASUREMENT OF BUILDING AND
CIVIL ENGINEERING WORKS
Oct./ Nov. 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN ROAD CONSTRUCTION

MEASUREMENT OF BUILDING AND CIVIL ENGINEERING WORKS

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;
Dimension papers;
A copy of Standard Method of Measurement of Building and Associated Civil Works for Eastern Africa (SMM);
A copy of Civil Engineering Standard Method of Measurement (CESMM).
Pocket calculator.

*This paper consists of **FIVE** questions in **TWO** sections; **A** and **B**.*
*Answer any **THREE** questions choosing **TWO** questions including **question 1** from section **A** and **ONE** question from section **B**.*
*Question **ONE** carries 40 marks while the rest carry 30 marks each.*
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

This paper consists of 6 printed pages.

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

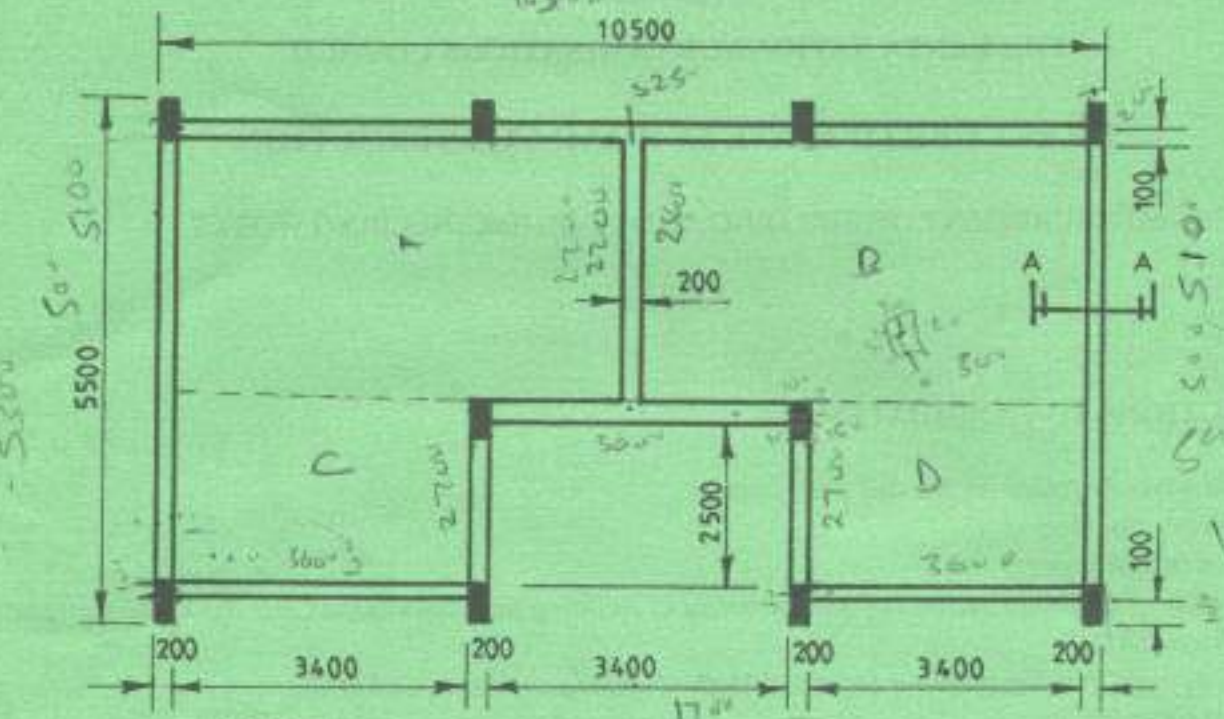
Turn over

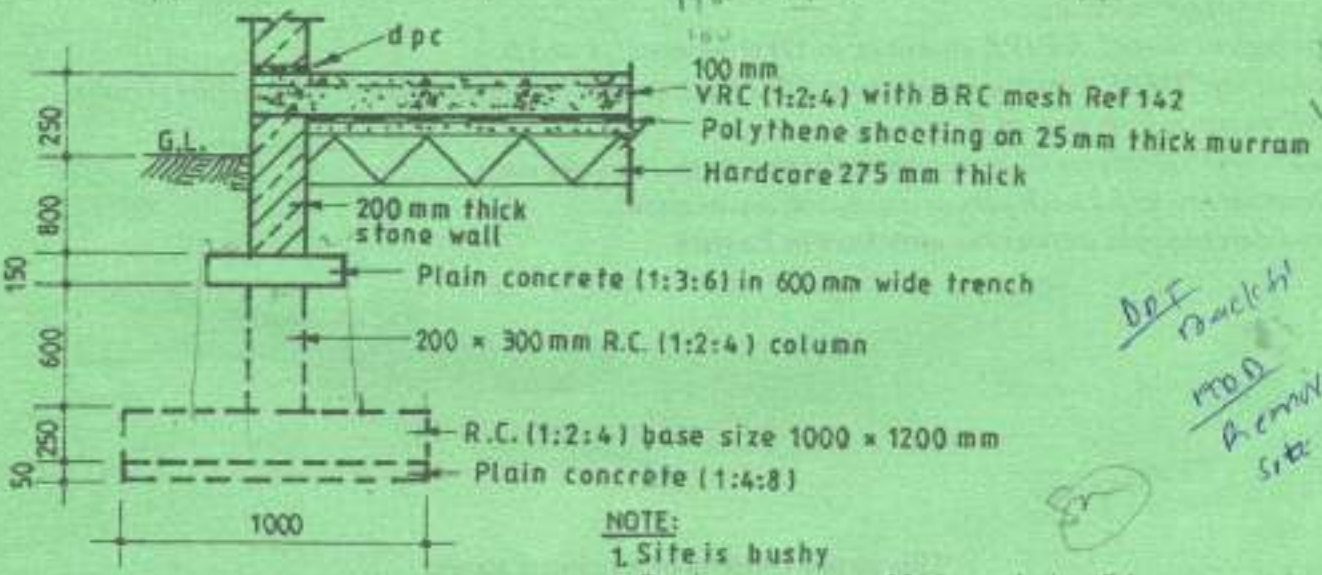
SECTION A

*Answer **question 1(compulsory)** and **ONE** other question from this section.*

Use the Standard Method of Measurement of Building and Associated Civil Works (Smm)

1. Take off all quantities for the 'substructure works' shown on drawing **No. 01** up to and including the damp proof course. (40 marks)

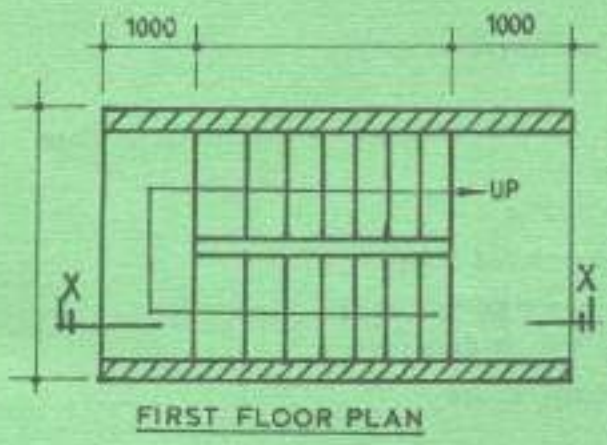




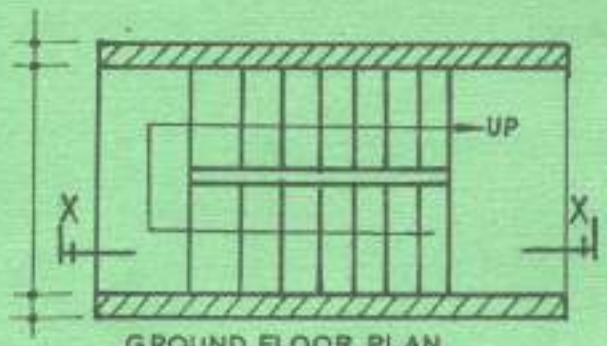
NOTE:
1. Site is bushy
2. Rock commences 1000 mm below G.L
3. Top soil 150 mm

DRG. No. 01

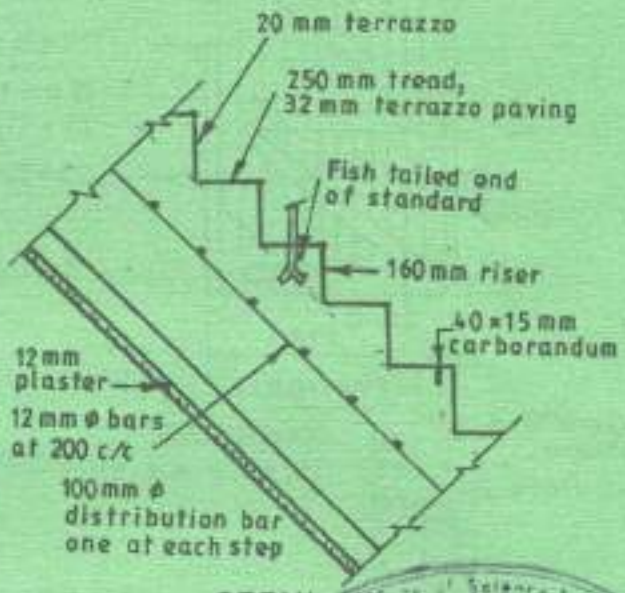
2. Take off all quantities for the staircase shown on drawing **No. 02.** (30 marks)



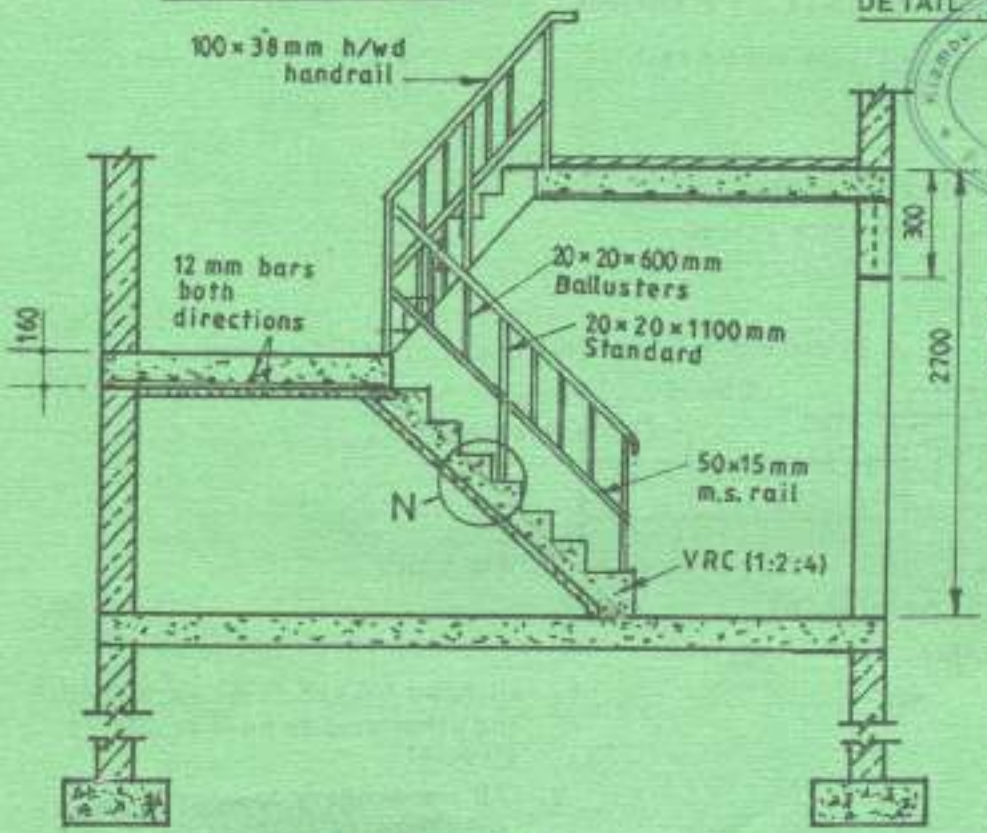
FIRST FLOOR PLAN



GROUND FLOOR PLAN



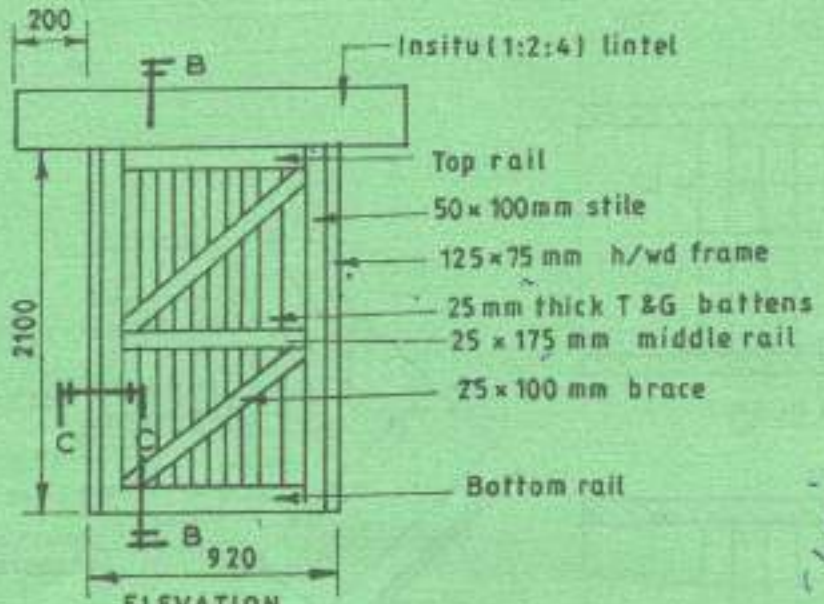
DETAIL 'N'



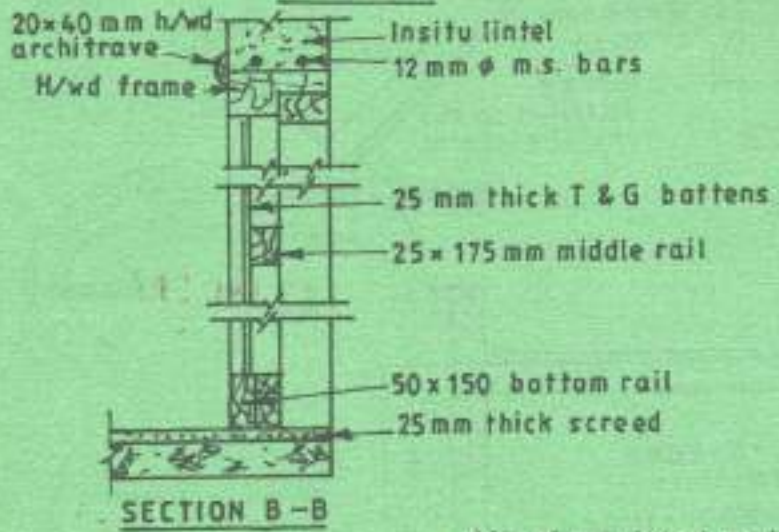
NOTE:
1. Rise = 160 mm
2. Tread = 250 mm
3. 50×6 mm plates on top of all ballusters and standards

DRG. No. 02

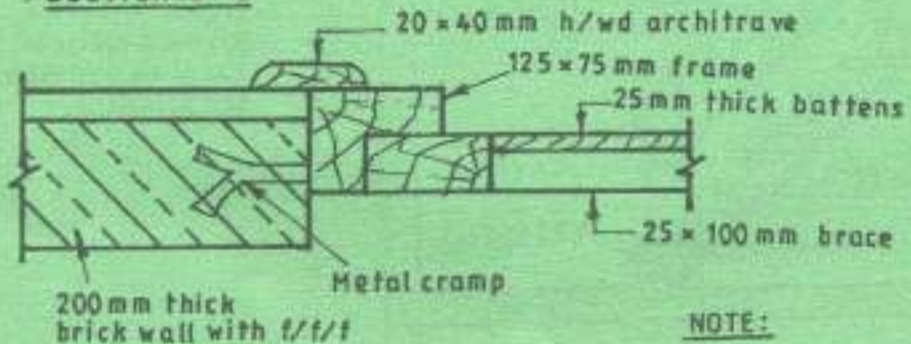
3. With reference to drawing **No. 03**, take off all quantities for the match boarded door including adjustments for the opening. (30 marks)



ELEVATION



SECTION B–B



SECTION C–C

NOTE:

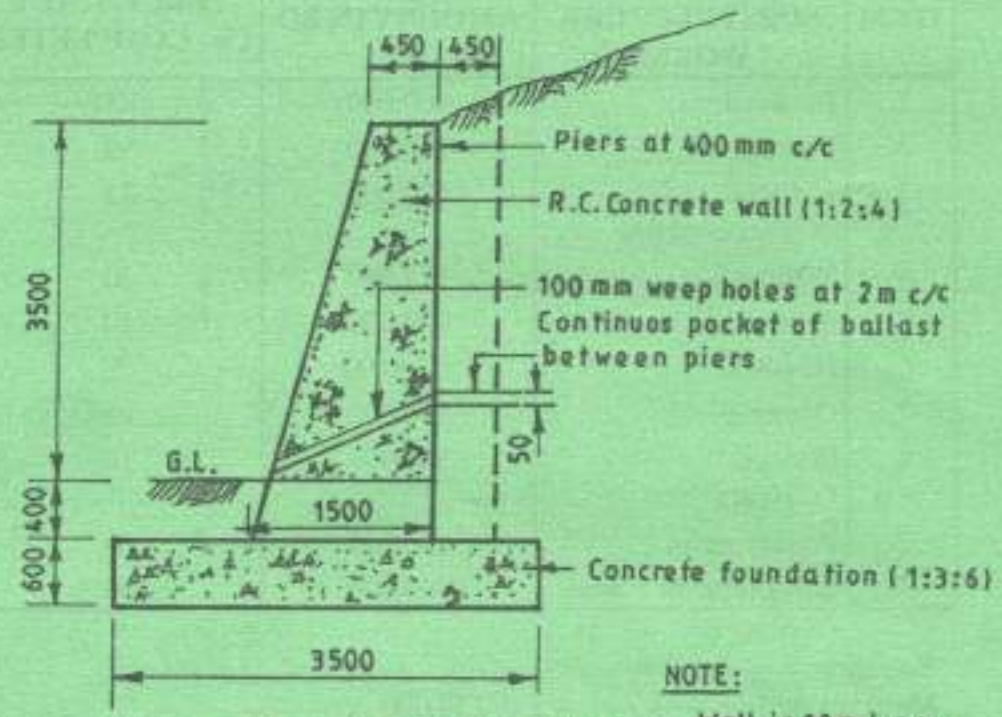
1. All h/wd timber to be varnished and other wood to have 3 coats of oil paint
2. All ironmongery to be supplied by a nominated supplier

DRG. No. 03

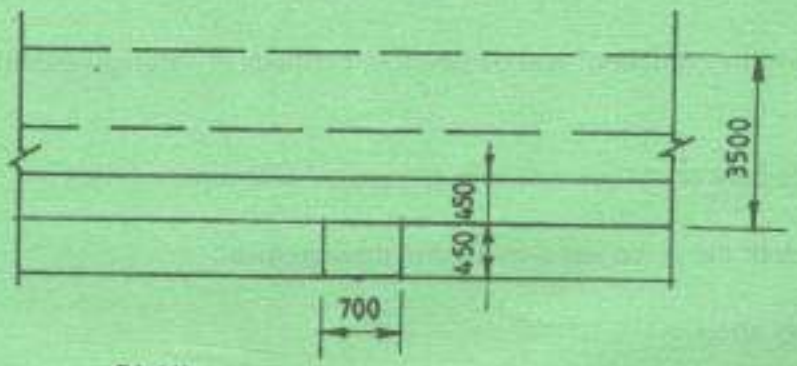
SECTION B

*Answer any **ONE** question from this section.*

4. Drawing **No. 04** shows a plan and section through a concrete retaining wall. Take off all quantities for the works using CESMM. (30 marks)



SECTION THROUGH RETAINING WALL



PLAN

DRG. No. 04

5. (a) Using the quantity surveyor's record given in **table 1** prepare an Interim valuation certificate **No. 05**. (15 marks)

Table 1
Quantity Surveyor's records for interim valuation certificate **No. 05**
Contract: Residential house Period:12 months

ITEM	OPERATION SUBSTRUCTURE WORKS	AMOUNT IN BD	PERCENTAGE (%) COMPLETED
1.	Excavations	400,000	100
2.	Foundation	650,000	90
3.	Hardcore and oversite concrete	420,000	75
4.	Walling	575,000	40
5.	Roof work	950,000	10
6.	Finishes	1,200,00	5
7.	Openings	550,000	25
8.	Fittings	350,000	10
	OTHERS		
9.	Preliminaries	950,000	60
10.	Subcontractor's work	800,000	50

Retention ---------- 10%
Materials on site ---------- Ksh 150,000
Previous payments certificate No 1 - Ksh 500,000
No 2 - Ksh 650,000
No 3 - Ksh 450,000
No 4 - Ksh 550,000

(b) Explain the term "variation" and outline four methods of valuing variations. (8 marks)

(c) Differentiate between prime cost sum and provisional sum. (4 marks)

(d) Outline each of the given terms as used in measurement:

(i) query sheet;
(ii) spot item.

(3 marks)

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