

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING TECHNOLOGY

DIPLOMA ~~IN~~ CIVIL ENGINEERING

MEASUREMENT OF BUILDING AND CIVIL ENGINEERING WORKS

ESTIMATING AND COSTING I

3 HOURS OCT/NOV 2012

**INSTRUCTIONS TO CANDIDATES**

*Write your name and index number on the spaces provided above.  
Sign and write the date of examination on the spaces provided above.  
You should have the following for this examination: Dimension papers, Pocket calculator,  
a copy of the Standard Method of Measurement of Building and Associated Civil Works for Eastern  
Africa (SMM) and a copy of the Civil Engineering Standard Methods of Measurement (CESMM).  
This paper consists of TWO sections: A and B. Answer any TWO questions from each section.  
Questions in section A carry 30 marks each while questions in section B carry 20 marks each.  
Maximum marks for each part of a question are as shown.*

**For Examiner's Use Only**

Section	Question	Maximum Score	Candidate's Score
A		30	
		30	
B		20	
		20	
TOTAL			

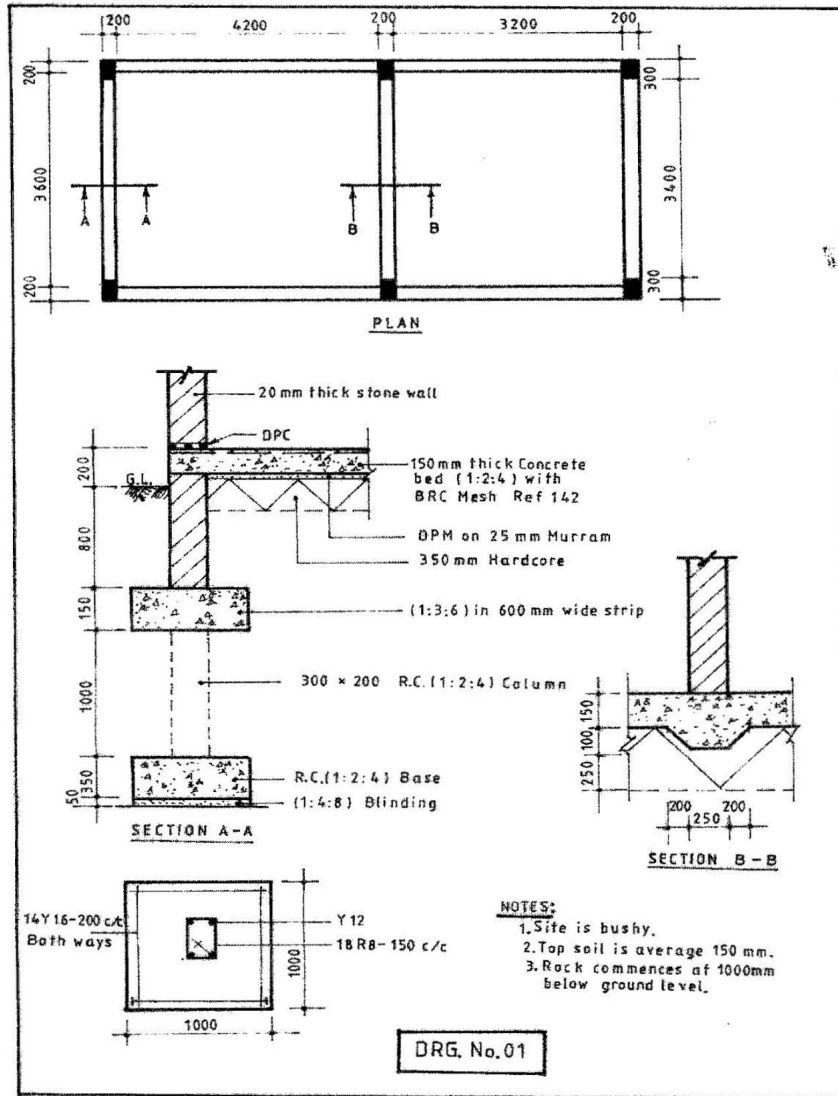
**This paper consists of 16 printed pages.**

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

**SECTION A: MEASUREMENTS**

. Answer any TWO questions from this section.

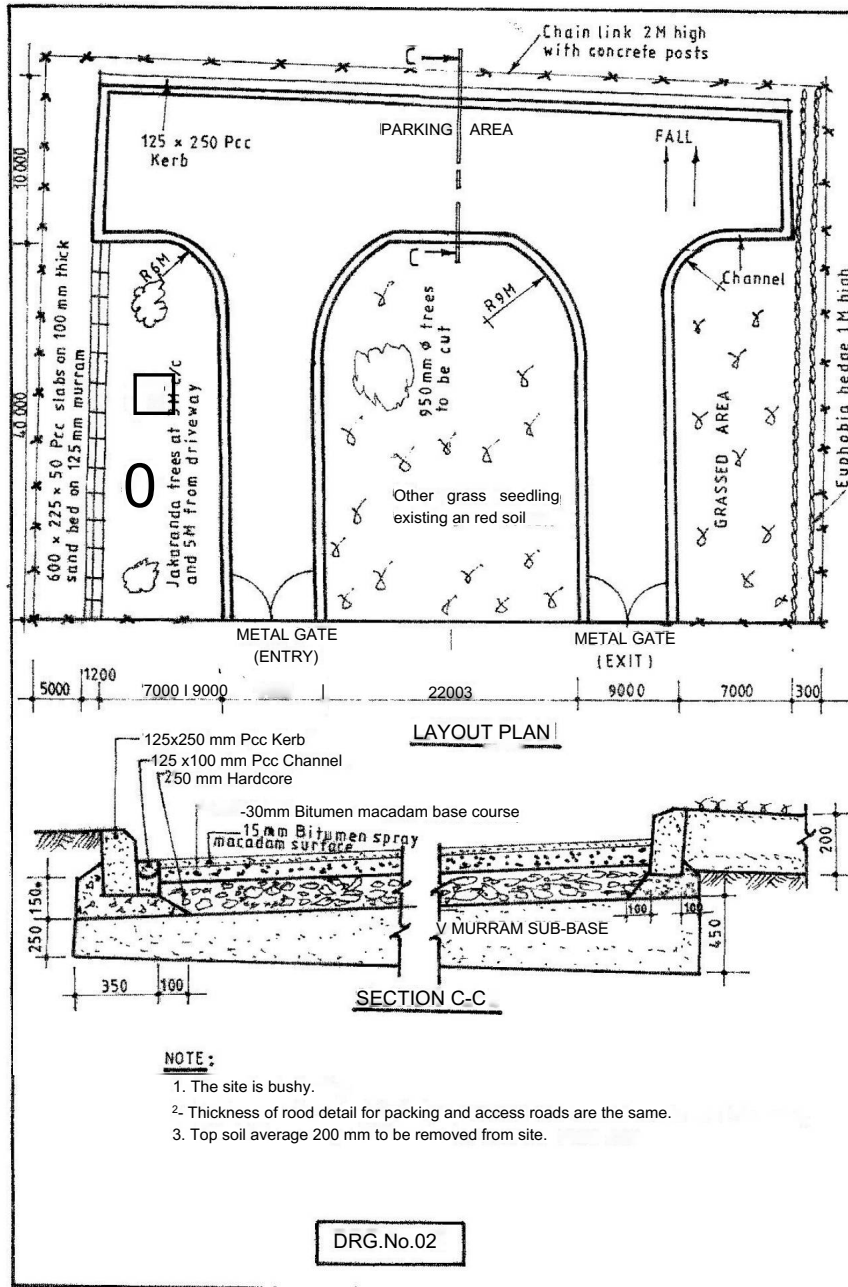
1. Take off all quantities for the 'substructure works' shown on drawing No.01 upto and including the damp proof course. (Use SMM). (30 marks)



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SECTION A: MEASUREMENTS

2. Take off all quantities for the 'external works' shown on drawing No.02. (Use CESMM). (30 marks)



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3. (a) Describe the following types of building and civil contracts.
- (i) Lumpsum contracts
  - (ii) Cost plus percentage contracts.
- (6 marks)
- (b) Explain the following types of payment certificates used in construction projects.
- (i) Interim
  - (ii) Penultimate
  - (iii) Final
- (7-5-marks) J
- (c) Briefly describe the following contract documents used in construction works.
- (i) Specifications
  - (ii) Bills of quantities.
- (4 marks)
- (d) Using hypothetical examples, explain how the following concepts are used in measurements.
- (i) Grouping of dimensions
  - (ii) Grouping of descriptions.
- (5 marks)
- (e) Explain **three** causes of variations in construction projects. (7<sup>1</sup> marks)

**SECTION B: ESTIMATING AND COSTING I**

• Answer any TWO questions from this section.

4. (a) Outline **four** roles of an estimator in a construction firm. (6 marks)
- (b) Discuss four design variables for adjustments when using rates from previous projects obtained from quantity surveyor's office. (14 marks)
5. (a) Using illustrations describe the following methods of approximate estimating giving two merits and two demerits of each.
- (i) Cubic method
  - (ii) Approximate quantities.
- (b) Explain the following terms as used in costing
- (i) all in labour rate
  - (ii) all in mechanical rate
6. (a) Using the data given build up a unit rate for "plain concrete (1:3:6) in foundation trench, per m<sup>3</sup>".

**DATA**

Cement per 50Kg bag	-	Ksh 750
Ballast per tonne	-	Ksh 1300
Sand per tonne	-	Ksh 1200
Density of cement	-	1442 kg/m <sup>3</sup>
Density of sand	-	1600 kg/m <sup>3</sup>
Density of balast	-	1500 kg/m <sup>3</sup>
Bulking of sand	-	20%
Skilled labour per hr	-	Kshs 75
Unskilled labour per hr	-	Kshs 45

Cost of materials includes transport to site. Make reasonable assumptions for information not given. (14 marks)

- (b) Using hypothetical examples and the data given, price for the preliminary item "temporary electricity power supply to the site".

**DATA**

Duration of the project	-	2 years
Contract sum	-	Ksh 200,000,000

(6 marks)

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