



2705/204

2707/204

MEASUREMENT OF BUILDING  
AND CIVIL ENGINEERING WORKS,  
ESTIMATING AND COSTING I

Oct./Nov. 2016

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING TECHNOLOGY  
DIPLOMA IN CIVIL ENGINEERING  
MODULE II**

MEASUREMENT OF BUILDING AND CIVIL ENGINEERING WORKS,  
ESTIMATING AND COSTING I

3 hours

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Dimension paper;*

*Pocket calculator;*

*A copy of the Standard Method of Measurement of Building and  
Associated Civil Works for Eastern Africa (SMM);*

*A copy of Civil Engineering Standard Method of Measurement (CESMM) and*

*An answer booklet.*

*This paper consists of SIX questions in TWO sections; A and B.*

*Answer FOUR questions; choosing TWO questions from each section.*

*Questions in section A carry equal 30 marks each while those in section B carry 20 marks each.*

*Maximum marks for each part of a question are indicated.*

*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.**

**SECTION A: MEASUREMENTS**

*Answer TWO questions from this section.*

1. Take off all quantities of the substructure works in drawing 01 upto and including dpc. (use SMM). (30 marks)
2. (a) Explain the importance of spacing items when taking off. (2 marks)  
(b) Explain the following terms as used in measurements:  
(i) extra over items;  
(ii) deemed to be included items;  
(iii) prime cost items. (6 marks)  
(c) Differentiate between operational and elemental bills. (4 marks)  
(d) Outline the process of preparing payment certificates. (10 marks)  
(e) Explain:  
(i) competitive tender;  
(ii) open tendering;  
(iii) selective tendering. (8 marks)
3. Take off all quantities for the bridge in drawing 02. (Use CESMM). (30 marks)

**SECTION B: ESTIMATING AND COSTING I**

*Answer TWO questions from this section.*

4. (a) Outline **three** ways of preparing interim payment certificates. (6 marks)  
(b) List the **four** methods of valuing variations. (2 marks)  
(c) Explain the significance of the following in the bills of quantities:  
(i) provisional sums;  
(ii) contingency sums. (6 marks)  
(d) State any **six** roles of the quantity surveyor at the inception stage of a project. (6 marks)





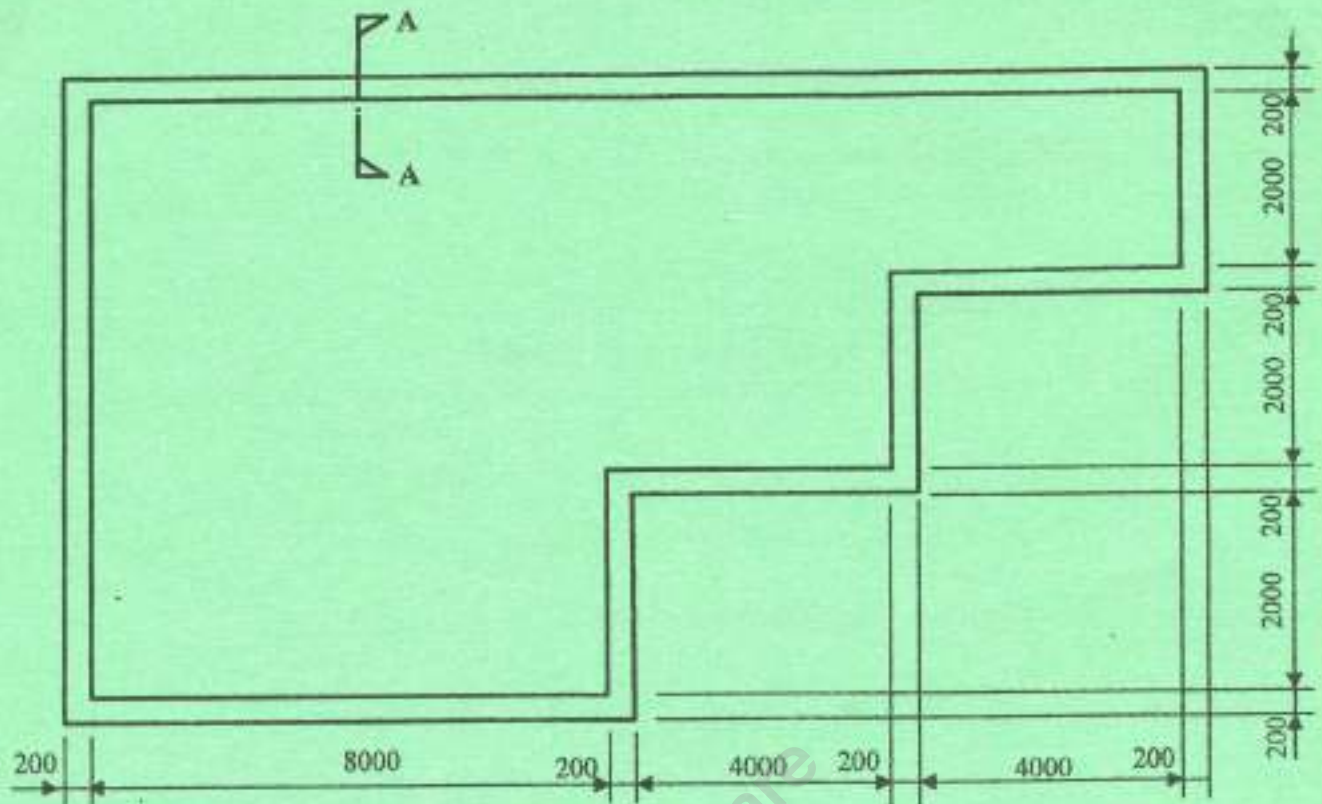
5. (a) List any **four** sources of cost information. (2 marks)
- (b) Explain the following terms:
- (i) all-in-labour rates;
  - (ii) man-hour.
- (5 marks)
- (c) State **three** duties of contractor's estimator. (3 marks)
- (d) Outline any **five** contents of an estimate of building and civil engineering works. (10 marks)
6. (a) Explain the purpose of approximate estimating. (2 marks)
- (b) Describe the following methods of estimating construction works:
- (i) the unit method;
  - (ii) the cube method for pitched roofs.
- (11 marks)
- (c) Drawing 03 is a line diagram of offices and workshops. Using the data given, estimate the cost of the block by superficial method of estimation. (7 marks)

Data:

Cost of workshops per sm = Kshs. 4,000/=

Cost of offices per sm = Kshs. 6,000/=

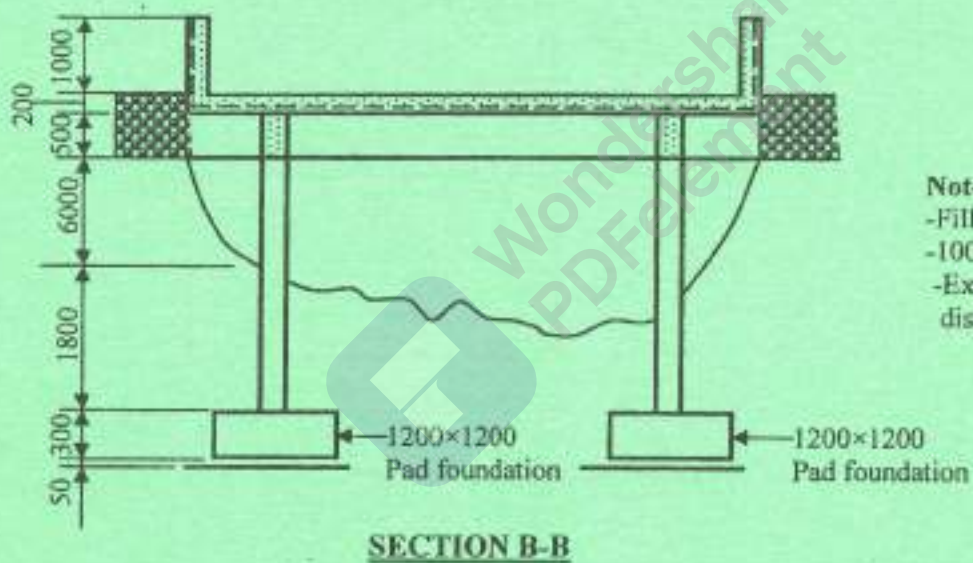
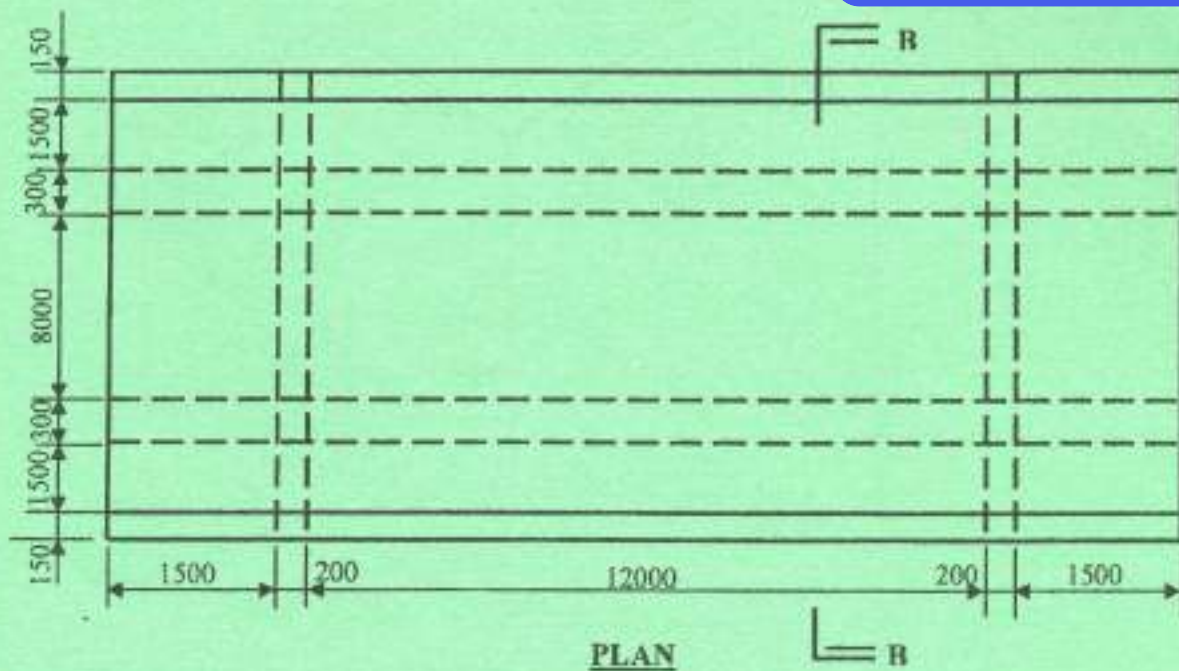
Wall thickness = 215 mm

PLANSECTION A-A**Notes:**

- The site is bushy
- Remove vegetable soil average 150mm
- Rock exists 1500mm below ground level

**Drawing 01**

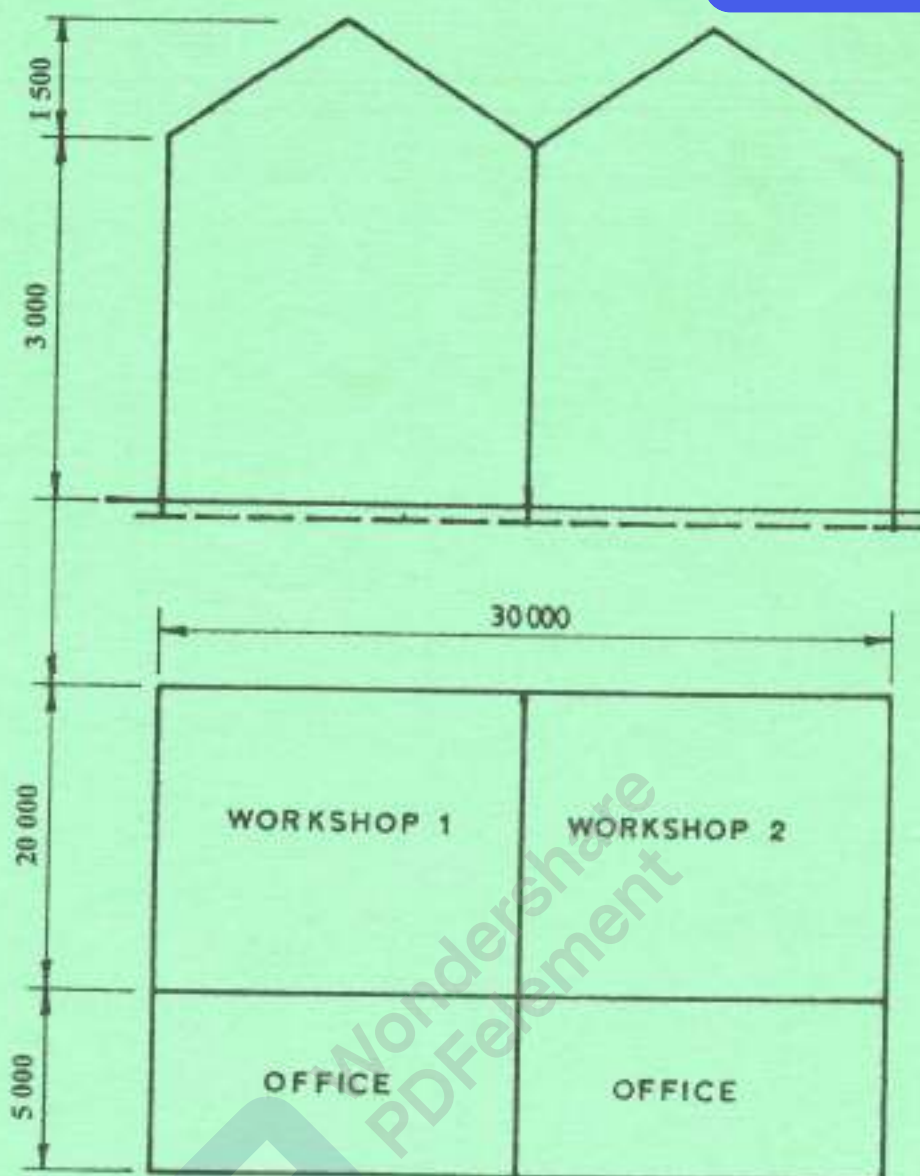




## Notes:

- Filling to be quarry stones
- 100mm wide road marking
- Excavated material for disposal

Drawing 02



Drawing 03

THIS IS THE LAST PRINTED PAGE.