

2705/204

2707/204

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

Oct./Nov. 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING CONSTRUCTION  
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;*

*Scientific calculator;*

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

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

*An answer booklet.*

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

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

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

*Candidates should answer the questions in English.*

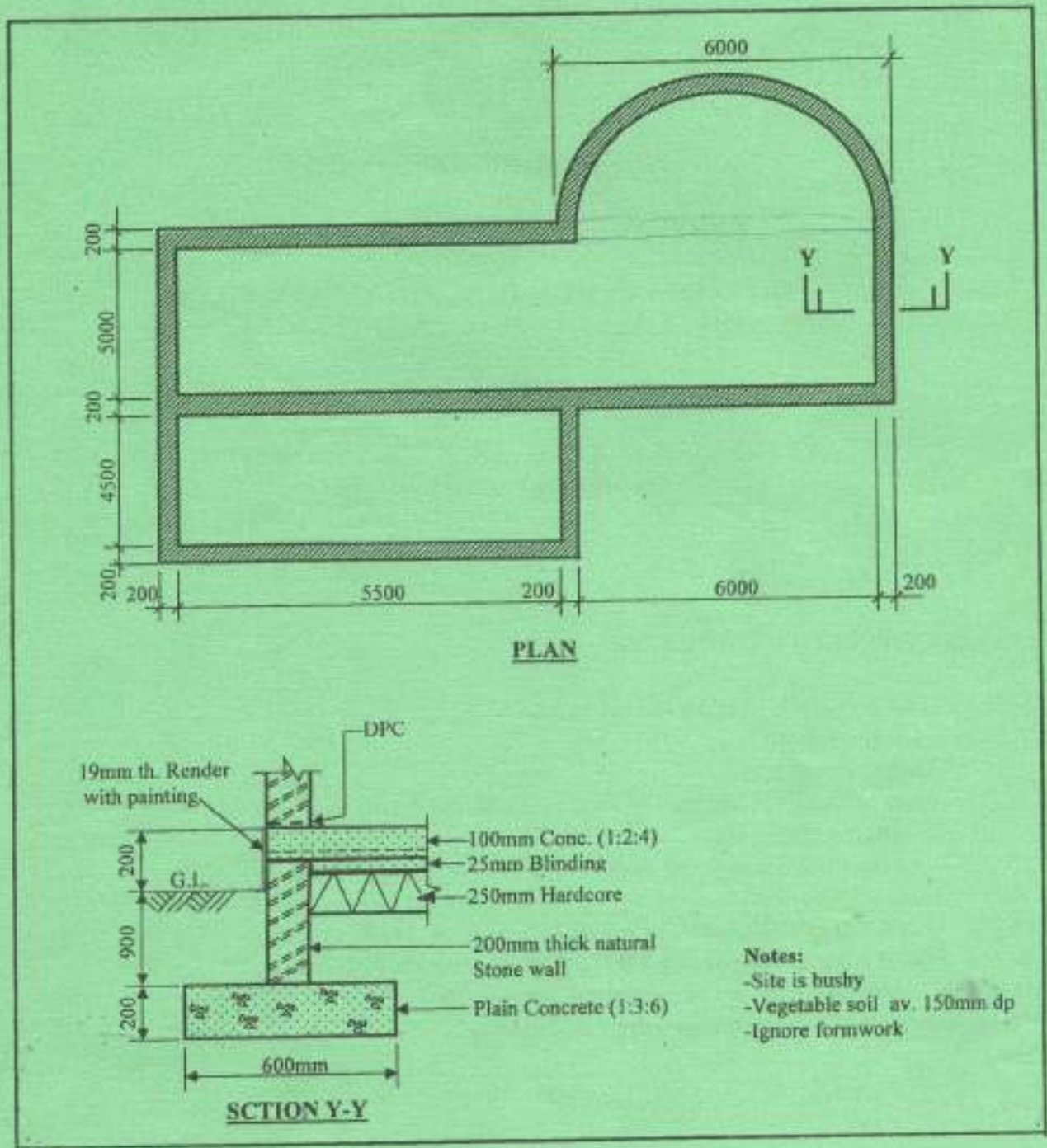
**This paper consists of 6 printed pages.**

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

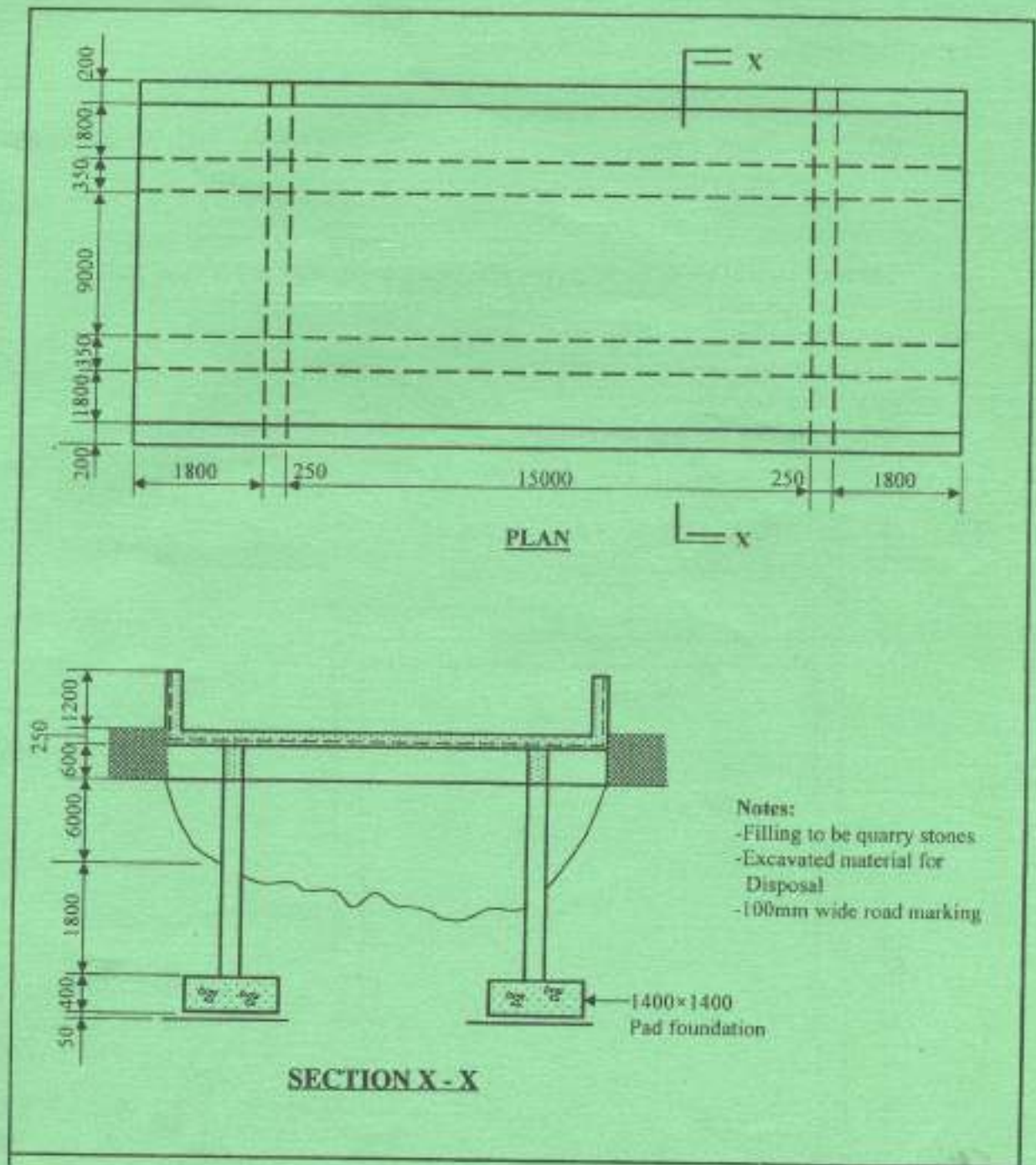
1. Take off all quantities for the substructure work shown on drawing No. 01 up to and including dump proof course. (30 marks)



Drawing No. 1

2. Take off all quantities for the bridge in drawing No. 02 (Use CESMM).

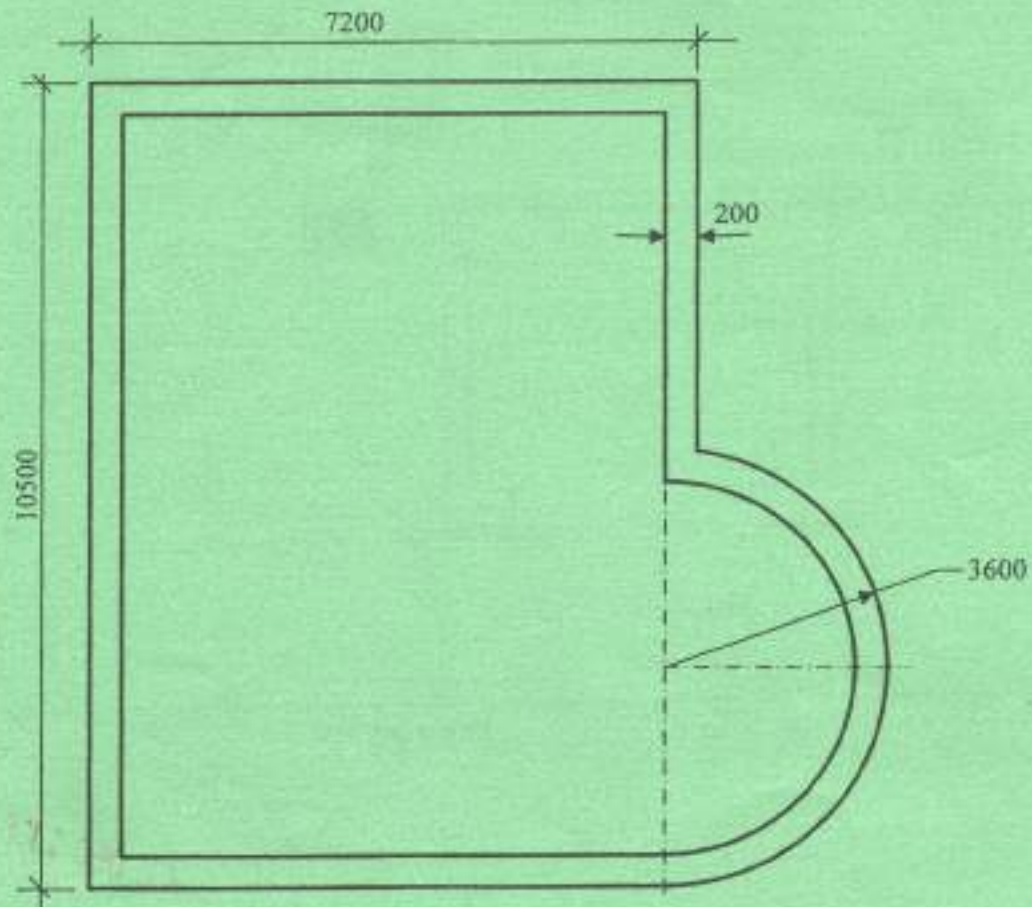
easytvet.com  
(30 marks)



Drawing No. 2



3. (a) Explain the measurement of works in relation to spot items giving two examples. (3 marks)
- (b) Explain the role of each of the following: (9 marks)
- (i) nominated sub contractor;
  - (ii) nominated supplier;
  - (iii) sub-contract;
- (c) Illustrate each of the following concepts of measurements in building works: (12 marks)
- (i) squaring;
  - (ii) dotting;
  - (iii) bracketing;
  - (iv) running through dimensions.
- (d) Determine the mean girth of drawing No. 03. (6 marks)



Drawing No. 3

## SECTION B: ESTIMATING AND COSTING

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

4. (a) List **six** sources of cost information. (3 marks)
- (b) Describe each of the following terms as used in estimating:
- (i) all in machine rate;
  - (ii) all in material rate;
  - (iii) all in labour rate;
  - (iv) man hour. (8 marks)
- (c) Explain each of the following approximate estimating methods:
- (i) cube (cubing) method;
  - (ii) functional unit method;
  - (iii) superficial method. (9 marks)
5. (a) Explain each of the following terms used in estimating:
- (i) cost plan;
  - (ii) cost planning;
  - (iii) cost study;
  - (iv) cost analysis. (8 marks)
- (b) List **six** design variables that affect the cost of a project. (6 marks)
- (c) (i) Differentiate between direct and indirect costs in estimating.
- (ii) List **four** methods of valuing variations. (6 marks)

6. **Figure 1** shows a proposed building with two basement floors and 10 storeys each 3 m high. The basement is 40 m long, 20 m wide and 3.8 m high. Determine the cost of constructing the building using the storey enclosure method given that the unit cost per square meter is Ksh 16,000. (20 marks)

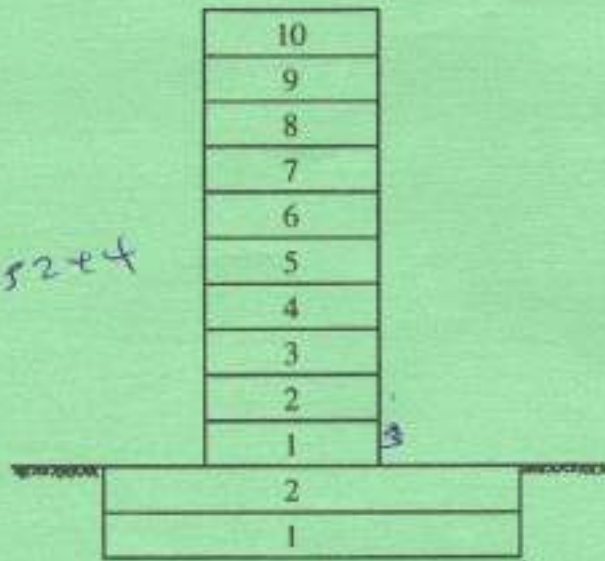
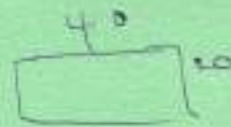


Figure 1



$$2(L+w)2L$$

$$2(Lw)$$

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