

2705/204

2707/204

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

June/July 2022

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);

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 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.

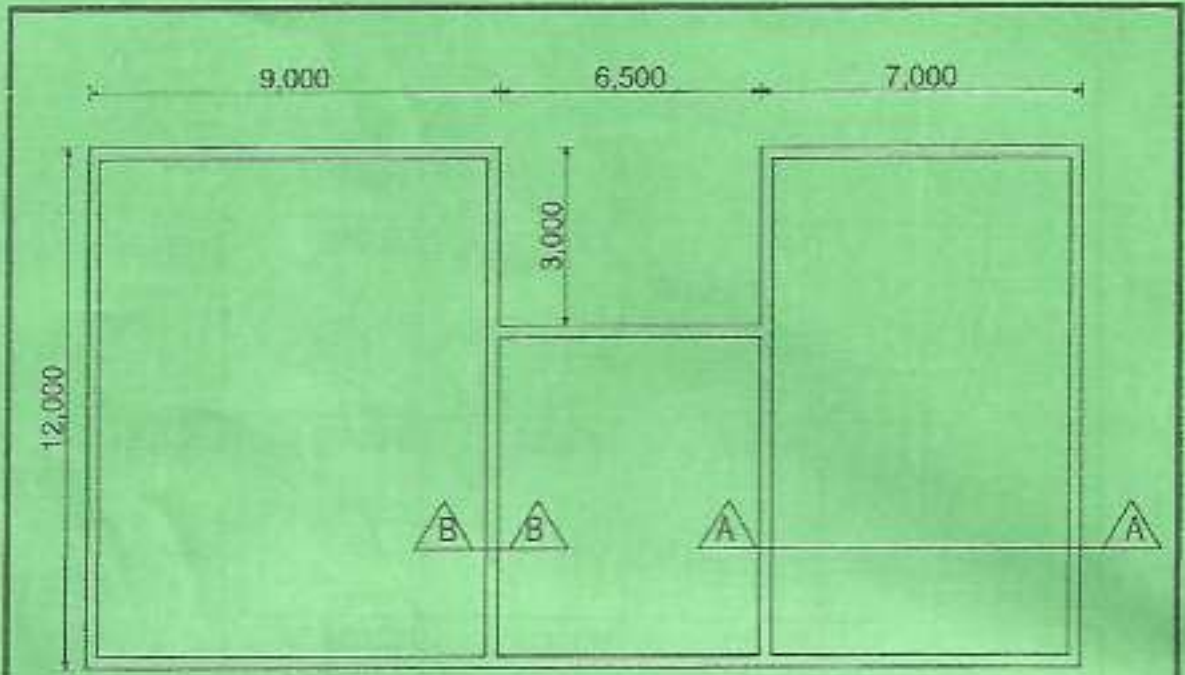
This paper consists of 5 printed pages.

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

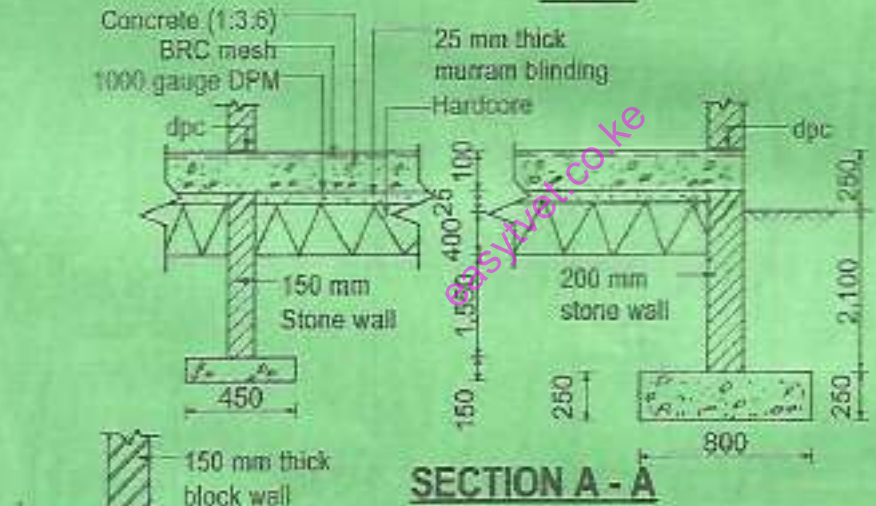
SECTION A: MEASUREMENT

Answer TWO questions from this section.

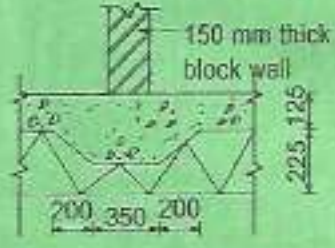
1. Take off all quantities for the substructure works in drawing No. 01 up to and including the dpc. (30 marks)
2. (a) Using hypothetical examples, explain booking of each of the following items in a dimension paper: (30 marks)
- (i) extra over items; (2 marks)
 - (ii) spot items;
 - (iii) provide a p.c sum of Ksh 600,000 for connection of drainage ends to the public sewer. (10 marks)
- (b) (i) Explain the term variation; (2 marks)
- (ii) Outline four methods of valuing variations. (4 marks) (8 marks)
- (c) State four items subject to retention and four items not subject to retention when preparing valuation of interim payment certificate. (8 marks)
- (d) Distinguish penultimate payment certificate from final payment certificate. (4 marks) (4 marks)
3. Drawing No. 02 shows a plan with spot heights, a contour line, excavation and filling areas.
- (a) Determine the average depth of excavation and height of fill.
 - (b) Take off all quantities for excavation and filling. (Use CESMM). (30 marks)



PLAN



SECTION A - A

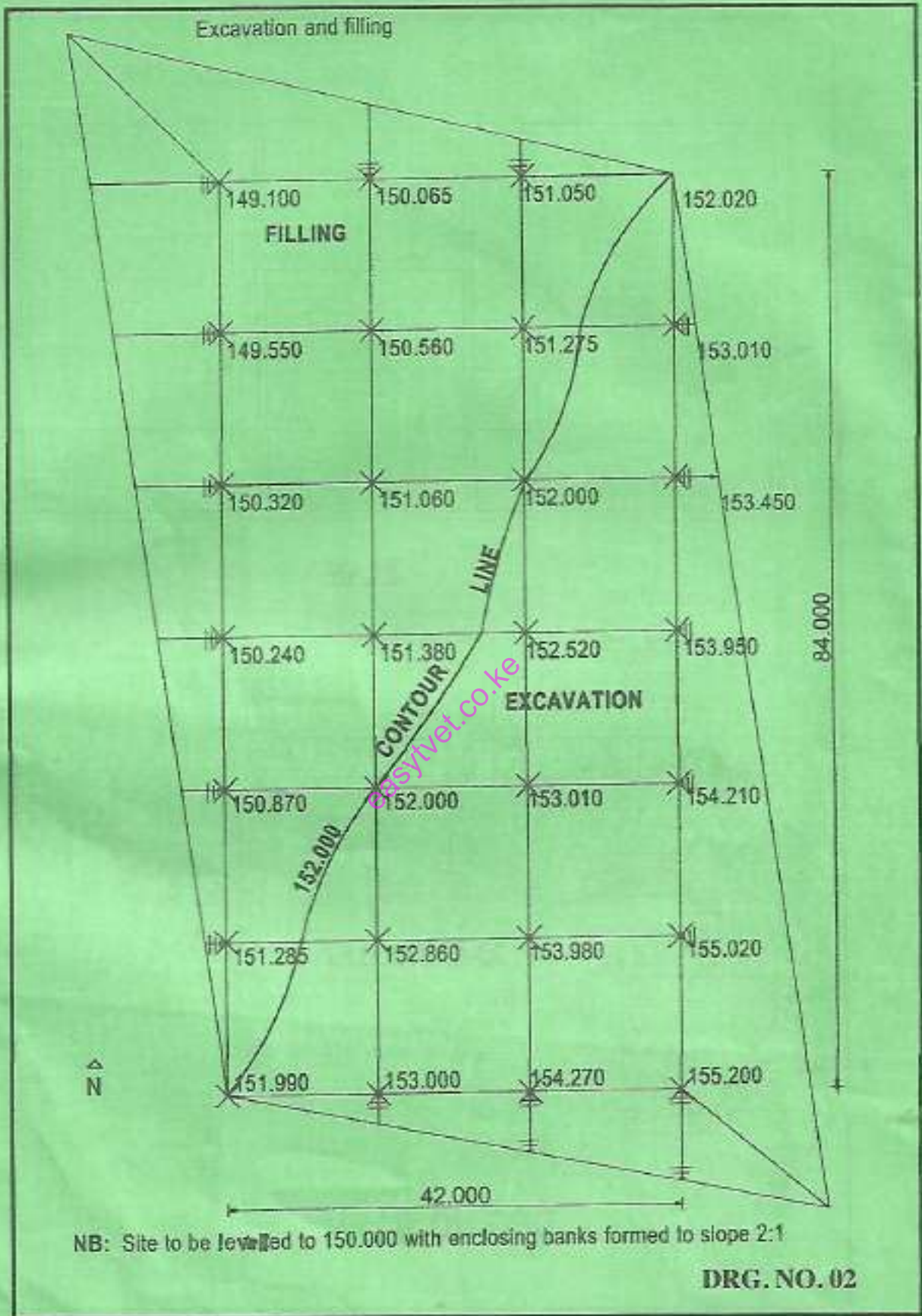


SECTION B-B

NOTES

- 1. Site is clear
- 2. Vegetable soil av. 150 mm depth

DRG NO. 01



Candor Ho.
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SECTION B: ESTIMATING AND COSTING I

Answer *TWO* questions from this section.

- ✓
- (a) Explain **four** roles of an estimator to a contractor. (8 marks)
- (b) Explain each of the following terms as used in costing.
- (i) man-hour;
 - (ii) unit rate;
 - (iii) all in labour rate;
 - (iv) all in material rate.
- (8 marks)
- (c) State **four** factors affecting owning cost when pricing mechanical plant. (4 marks)
5. (a) Describe each of the following methods of estimating construction works:
- (i) the functional method;
 - (ii) the cube method for flat roofs.
- (6 marks)
- (b) State **six** sources of cost information. (3 marks)
- (c) Determine the cost of an office block whose external dimensions are 25 x 15 m with four floors, consisting of one basement floor with height of 3.20 m and three upper floors of storey heights of 2.80 m. The thickness of the basement wall is 250 mm while that of the upper walls is 200 mm. The storey enclosure cost per square metre is given as Ksh 32000. (11 marks)
- ✓
- (a) Explain **four** contract documents for construction projects. (8 marks)
- (b) Explain each of the following sums included in bills of quantities.
- (i) prime cost sum;
 - (ii) provision sum;
 - (iii) contingency sum.
- (6 marks)
- (c) Outline **four** roles of a quantity surveyor at post construction stage of a contract. (6 marks)

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