

2705/205
BUILDING CONSTRUCTION II
AND DRAWING II
Oct./Nov. 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN BUILDING TECHNOLOGY
MODULE II
BUILDING CONSTRUCTION II AND DRAWING II

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments;

Drawing paper size A3;

Non-programmable Scientific calculator.

This paper consists of EIGHT questions in TWO sections, A and B.

Answer any FIVE questions choosing TWO questions from section A, TWO questions from section B and ONE question from either section.

All questions carry equal marks.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 9 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: BUILDING CONSTRUCTION II

Answer at least **TWO** questions from this section.

1. (a) State **three** reasons for providing openings in suspended upper floors. (3 marks)
- (b) With the aid of labelled sketches, distinguish 'intersecting barrel vault' from 'transitional dome' roofs. (13 marks)
- (c) Differentiate between a 'hipped rafter' and a 'trussed jack rafter'. (4 marks)
2. (a) Explain the **three** types of timber upper floors. (6 marks)
- (b) With the aid of labelled sketches, differentiate between 'solid concrete' and 'hollow pot' suspended upper floors. (14 marks)
3. (a) Outline **four** types of roof coverings. (6 marks)
- (b) Sketch and label an eave detail to a concrete flat roof. (6 marks)
- (c) Explain **four** methods of fixing a wall plate onto a wall. (8 marks)
4. (a) **Figure 1** shows the roof plan and a section of a building with an overhang on one side. Using the data provided, estimate the cost of the roof.

Data

- Cost of timber	Kshs. 20,000	per cubic metre
- Cost of iron sheets	Kshs. 800	per metre
- Cost of ridge piece	Kshs. 500	per 2 metre length
- Roofing nails	Kshs. 200	per kilogram
- Ordinary nails	Kshs. 150	per kilogram
- Waste on timber only	2.5%	

(20 marks)

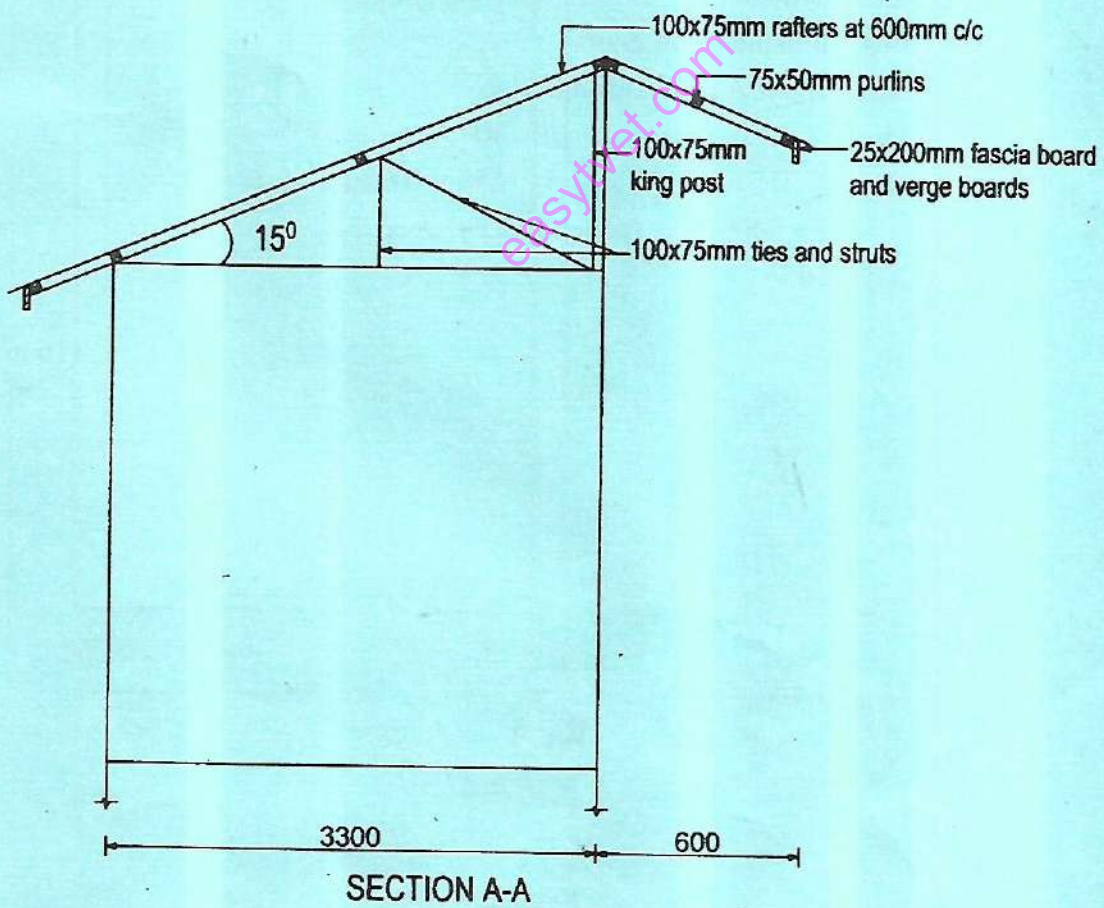
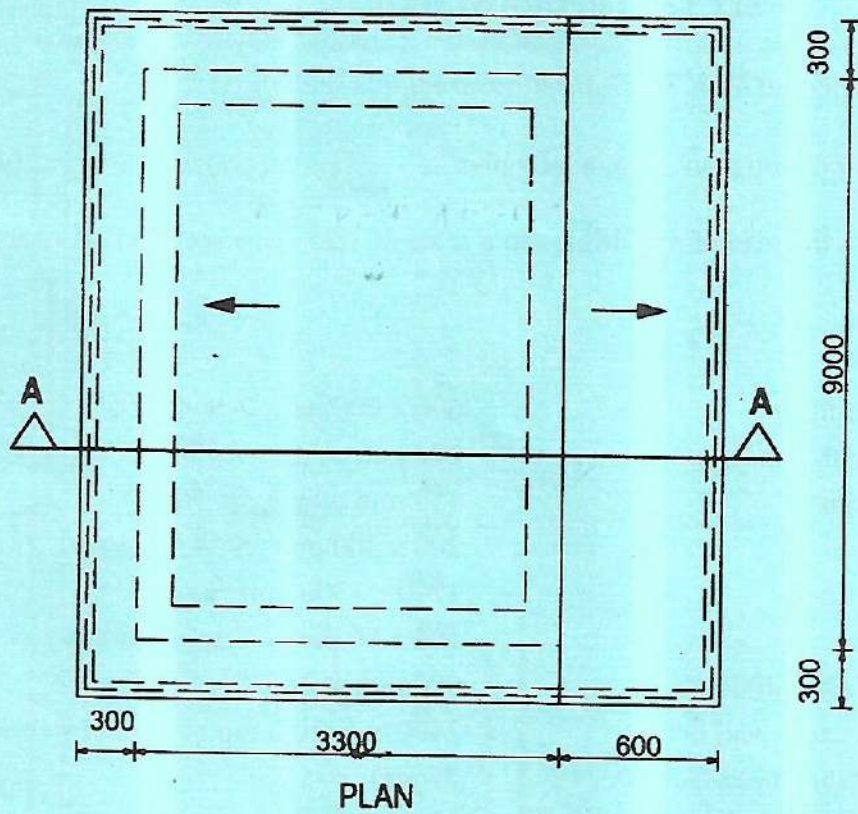


FIGURE 1

SECTION B: DRAWING II

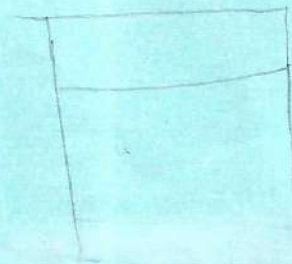
Answer at least TWO questions from this section.

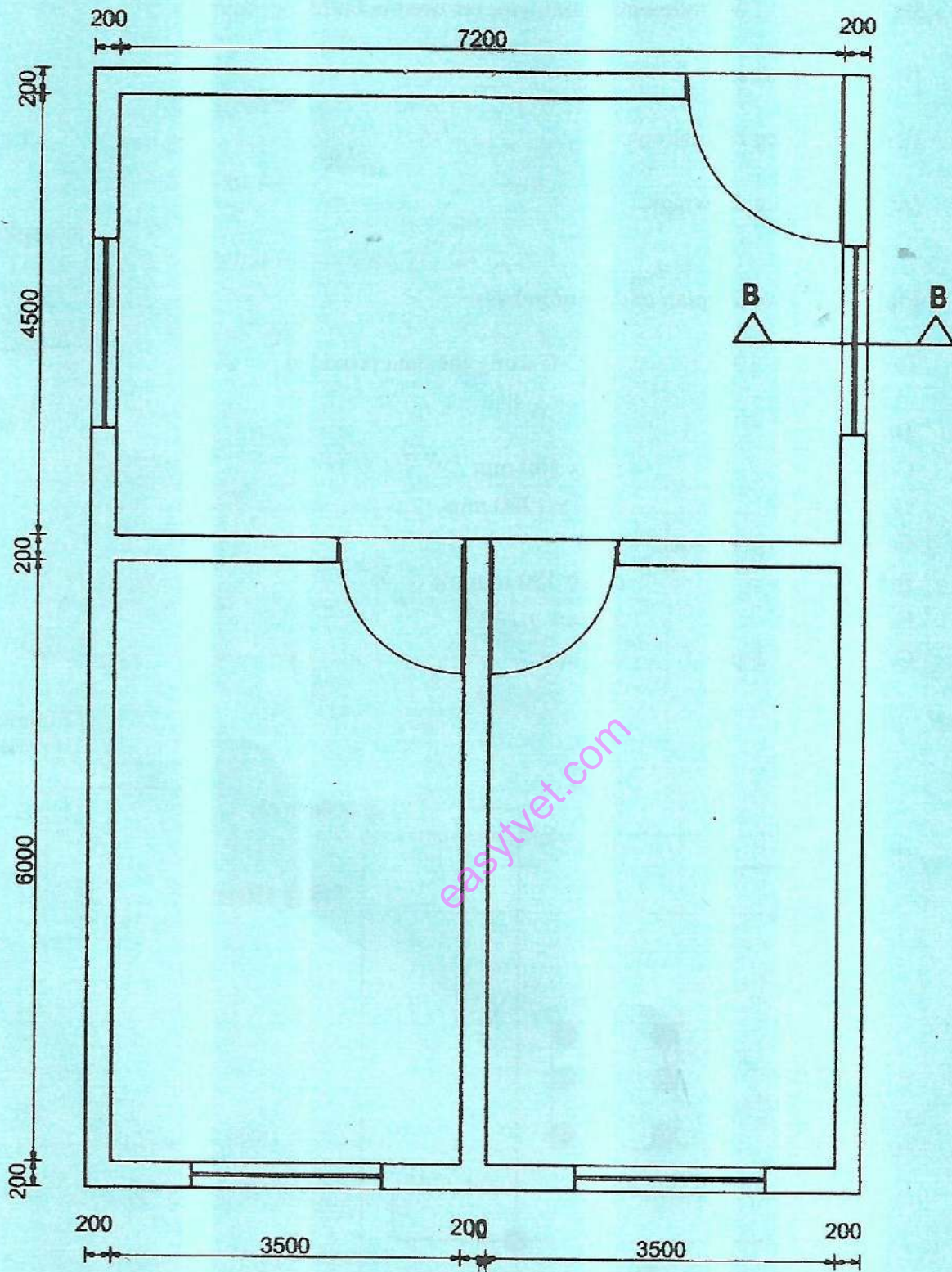
5. (a) Distinguish a 'location plan' from a 'site plan'. (4 marks)
- (b) **Figure 2** shows the plan of a building. To a scale of 1:25 draw section B-B using the data provided.

Data

✓ 1 Strip footing	600 x 200 mm	2-4 x 0-8
✓ 4 Hardcore thickness	200 mm	0-2 0-8
- 6 Slab thickness	150 mm	0-6 0-6
- 12 Beam size	200 x 300 mm	0-8 x 1-2
✗ 8 Window size	1200 x 1500 mm	4-8 x 6
- 12 Wall plate	100 x 50 mm	0-4 x 0-2
✓ 2 Foundation wall depth	900 mm	3-6
- 8 Superstructure wall height	2400 mm from top of ground slab	9-6
✓ 3 Blinding thickness	25 mm	0-1
- 5 Damp proof membrane DPM polythene 1000 gauge		4-7
- Bituminous felt damp proof course		4
- 7 BRC mesh Ref. No. A142 in ground slab		
- 14 Roof pitch	30°	
- 15 Rafter	150 x 100 mm	0-6 x 0-4
✓ 10 Door size 1200 x 2400 mm (panel door)		4-8 x 9-6
✗ 11 Door leaf closed		

(16 marks)





PLAN
FIGURE 2

6. (a) Explain each of the following terminologies used in building projects:

- (i) schedules;
- (ii) building regulations;
- (iii) working drawings.

(6 marks)

(b) Figure 3 shows the plan of a column base.

To a scale of 1:10 draw section C-C using the data provided.

Data

Column size	300 x 300 mm <i>3' x 3'</i>
Column base	1200 x 1200 mm <i>12' x 12'</i>
Column reinforcements	T 16
Binding wire	R8 @ 150 mm c/c <i>1.5'</i>
Cover	25 mm <i>0.25'</i>
Column base depth	400 mm <i>4'</i>

(7 marks)

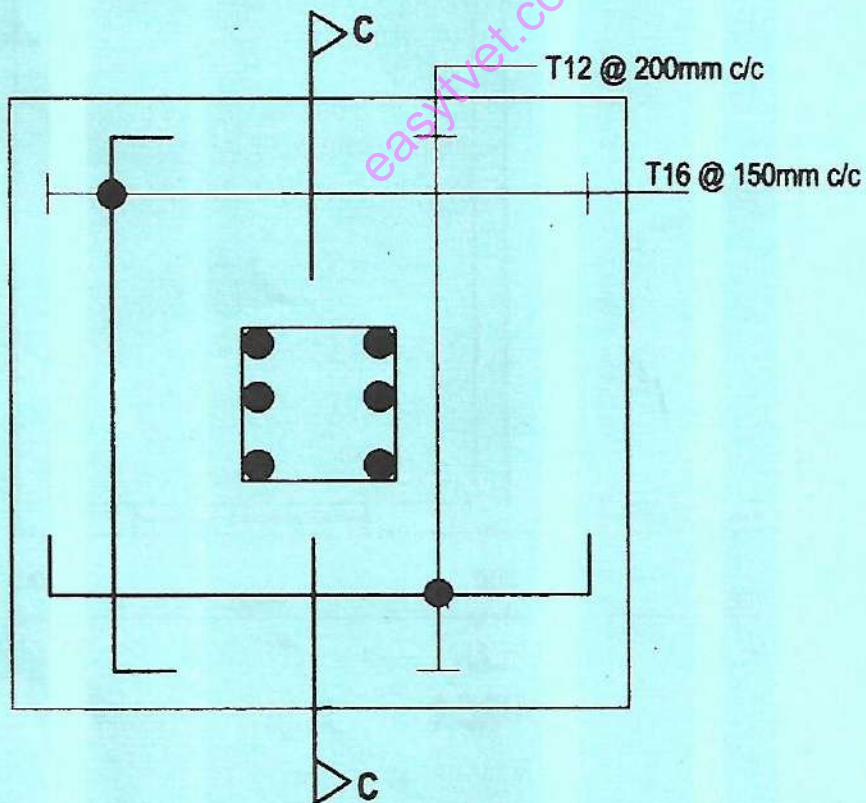


FIGURE 3

- (c) **Figure 4** shows the reinforced concrete detail for a suspended slab. To a scale of 1:5 draw section D-D using the data provided.

Data

- Beam size 200 x 450 mm
- Slab thickness 150 mm
- Cover 25 mm
- Beam reinforcements: 2T12 at the top
3T12 at the bottom
- Binding wire R8 @ 150 mm c/c

(7 marks)

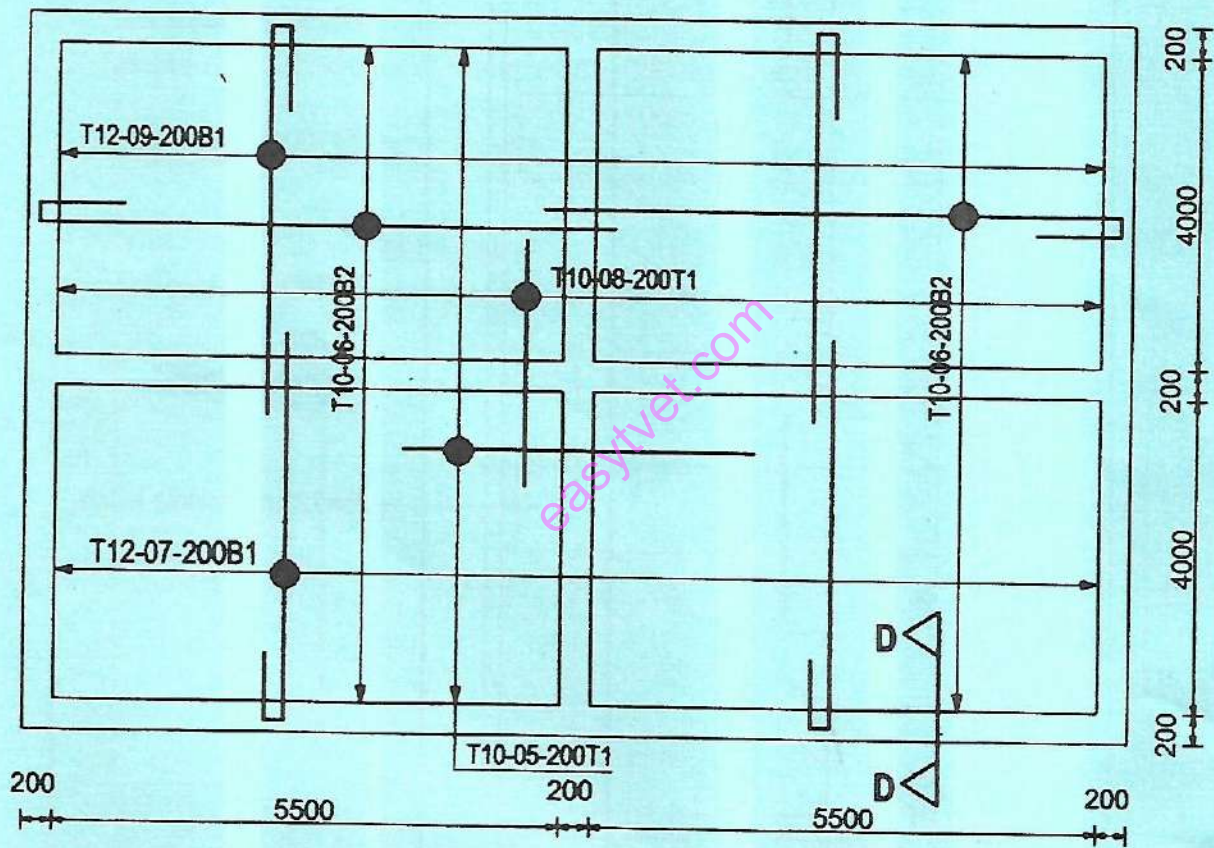


FIGURE 4

7. (a) Explain **two** functions of each of the following parties in the construction industry:

(i) social researchers;

(ii) lawyers.

(8 marks)

(b) **Figure 5** shows the elevation of a door. To a scale of 1:5 draw section X-X using the data provided.

(12 marks)

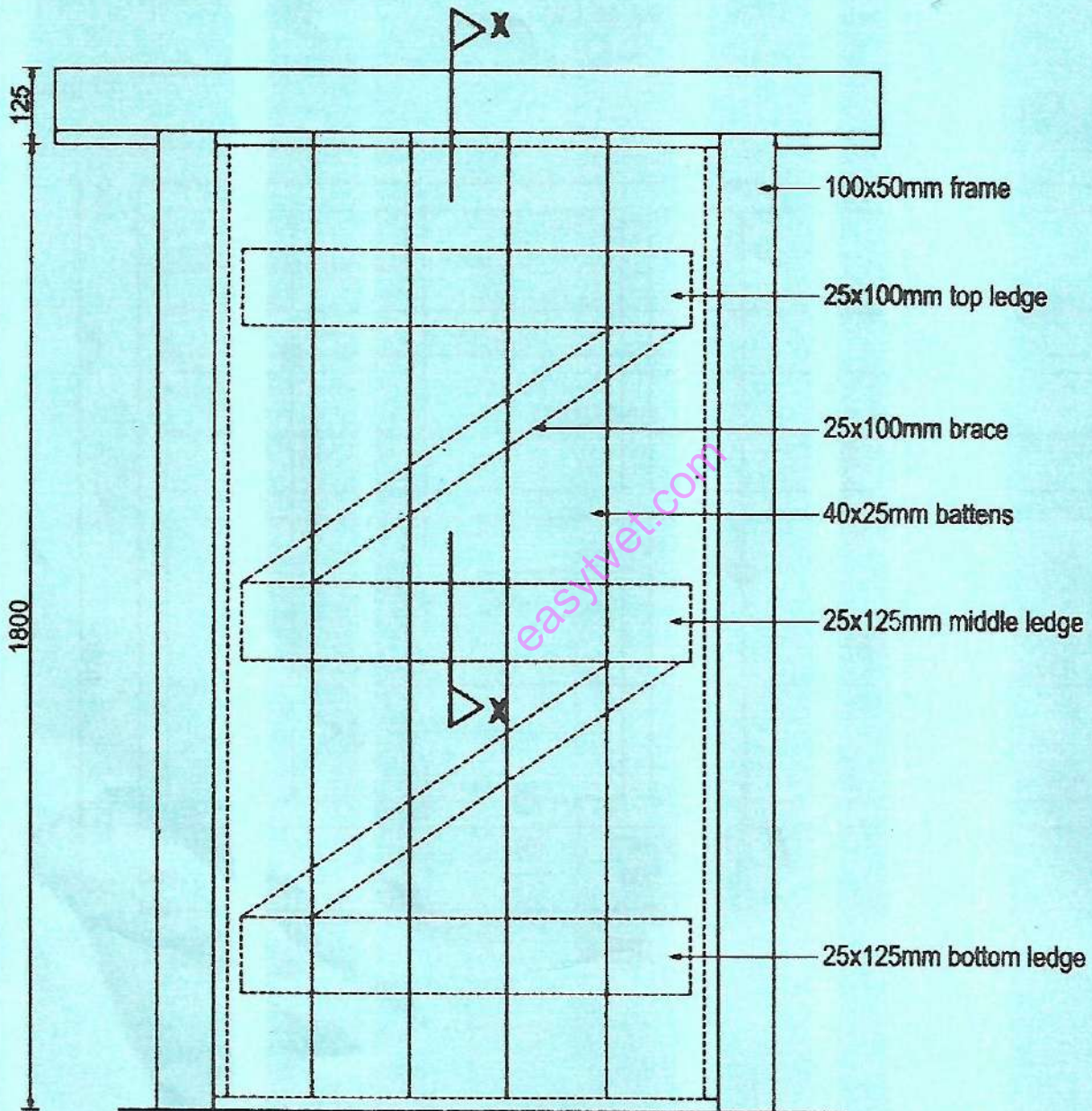


FIGURE 5

8. **Figure 6** shows the plan of a septic tank. To a scale of 1:25 draw section k-k using the data provided. (20 marks)

Data

- Suspended slab thickness 200 mm
- Wall projection for septic tank 200 mm
- Concrete bed thickness 150 mm
- Blinding thickness 75 mm
- Depth of wall A 2250 mm
- Depth of wall B 1500 mm
- Depth of baffle wall A 1250 mm with 250 mm above sewer level
- Depth of baffle wall B 750 mm from top of base slab
- Medium duty cast iron cover size 600 x 450 mm
- All pipes 100 mm diameter
- Depth of manhole from ground level 900 mm (From top of suspended slab)
- Manhole bed thickness 100 mm
- The base slab slants from baffle wall B to wall A

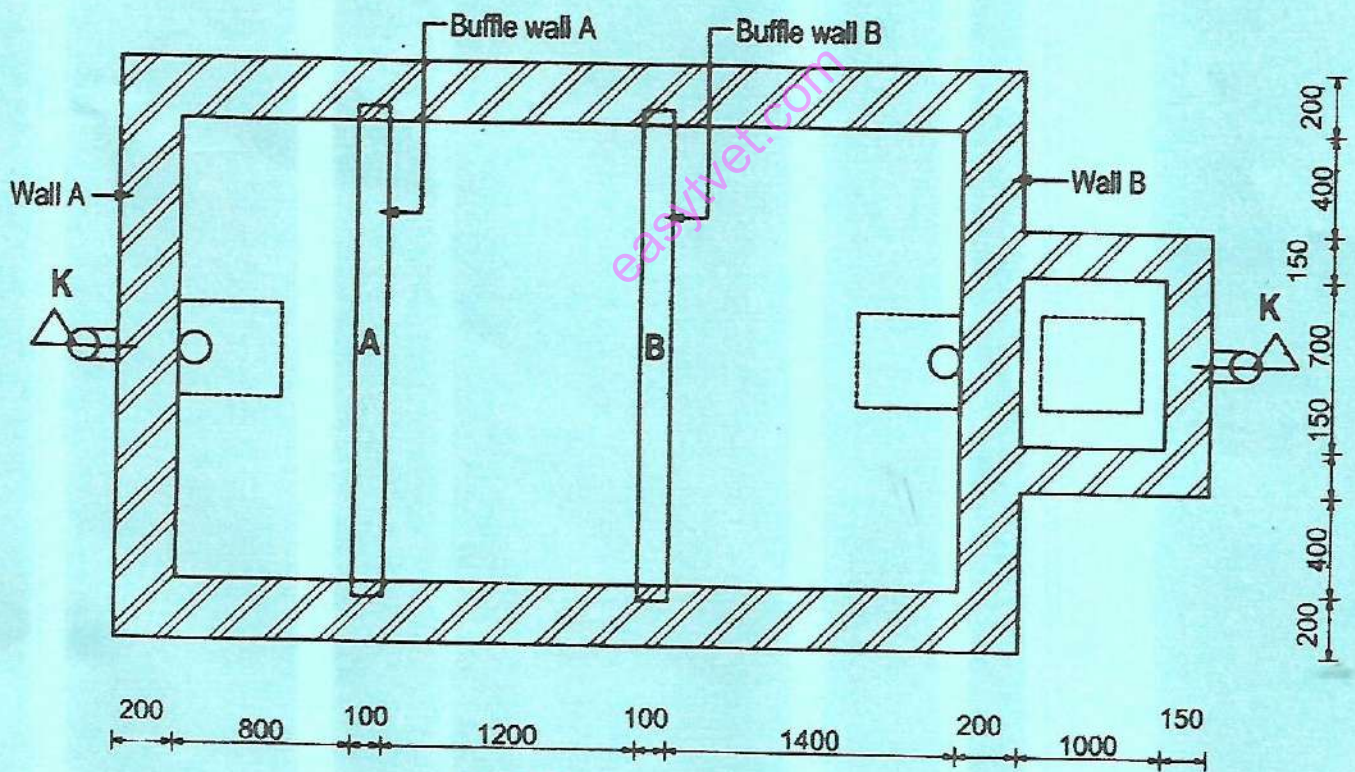


FIGURE 6

THIS IS THE LAST PRINTED PAGE.