

Name \_\_\_\_\_ Index Number: \_\_\_\_\_

1704/103  
BUILDING CONSTRUCTION I  
AND DRAWING  
Oct/Nov 2015  
Time: 3 hours

Candidate's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
CRAFT CERTIFICATE IN BUILDING TECHNOLOGY  
MODULE I

BUILDING CONSTRUCTION I AND DRAWING

3 hours

**INSTRUCTIONS TO CANDIDATES**

*Write your name and index number in the spaces provided above.*

*Sign and write the date of the examination in the spaces provided above.*

*You should have a scientific calculator and drawing instruments for this examination.*

*This paper consists of TWO sections: A and B.*

*Answer FIVE questions choosing at least TWO questions from section A and TWO questions from section B and any other ONE question from either section A or B in the spaces provided in this question paper.*

*All questions carry equal marks.*

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

*Candidates should answer the questions in English.*

**For Examiner's Use only**

Section	Question Number	Maximum Score	Candidates Score
A		20	
		20	
		20	
B		20	
		20	
		20	

**This paper consists of 20 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 I (40 marks)**

*Answer any TWO questions from this section in the spaces provided.*

1. (a) State **two** factors which determines the depth of a foundation. (2 marks)
- (b) Sketch and label the details of a solid ground floor. (6 marks)
- (c) Sketch the following types of foundations:
- (i) Pad foundation;
  - (ii) Raft foundation;
  - (iii) Pile foundation
- (d) Sketch a vertical cross-section through **timbering** to firm soil. (9 marks)
- (3 marks)
2. (a) Differentiate between English bond and Flemish bond. (4 marks)
- (b) List **four** dewatering methods in foundation trenches. (2 marks)
- (c) Figure 1 shows a brick pier which supports a load of 500 KN. The pier is 0.5 x 0.5 m in section and 2 m high. If it rests on a concrete foundation 1 m square and 0.25 m thick. Determine the value of the support reaction provided by the ground. (10 marks)

(Take density of both brick and concrete to be 2400 Kg/m<sup>3</sup> and force of gravity as 10 N)

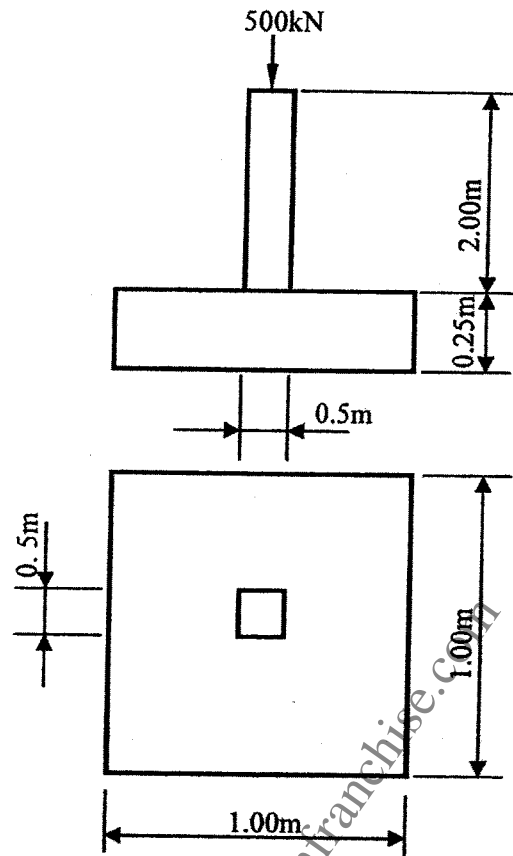


Fig. 1

- (d) State **four** factors to be considered before putting up a building on a site. (4 marks)
3. (a) Explain the purpose of the following in building works:
- (i) Hard core
  - (ii) Blinding
  - (iii) Sleeper walls
- (9 marks)
- (b) Sketch and label a form work for a reinforced concrete beam. (7 marks)
- (c) Differentiate between dead loads and live loads. (4 marks)

4. (a) State **three** properties of rendering. (3 marks)
- (b) State **four** ways of enhancing the load bearing capacity of pile foundations. (4 marks)
- (c) Sketch and label the elevation of a segmental arch. (9 marks)
- (d) Explain the following types of walls:
- (i) Masonry wall;
- (ii) Monolithic wall. (4 marks)

### SECTION B: DRAWING

*Answer at least TWO questions from this section in the drawing papers provided.*

5. Figure 2 shows a front elevation of a truncated cone, cut at  $30^\circ$  to the horizontal and an incomplete plan.

Draw:

- (i) the complete plan
- (ii) the true shape of the cut portion
- (iii) surface development of the cone opened at A

(20 marks)

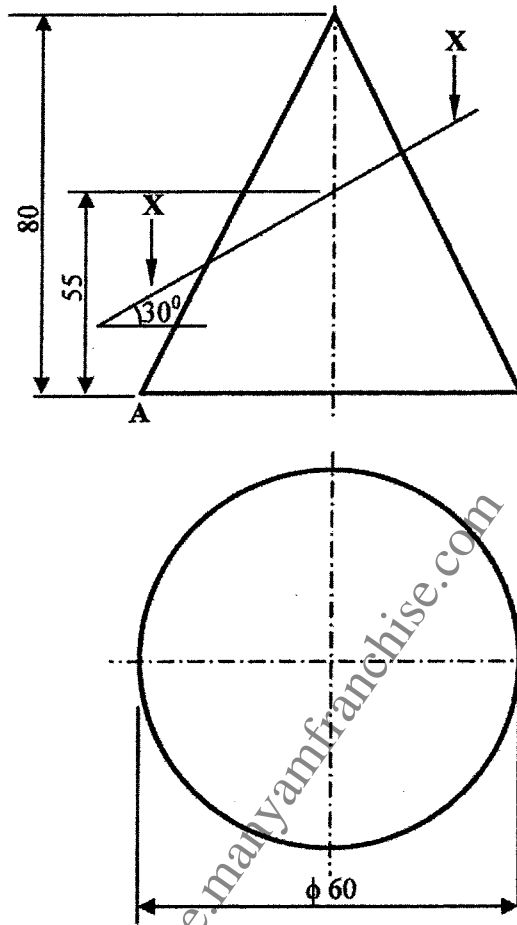


Fig. 2

6. Figure 3 shows orthographic views of a shaped object. To a scale of 1:1, draw an isometric view of the object with X as the lowest point.

(20 marks)

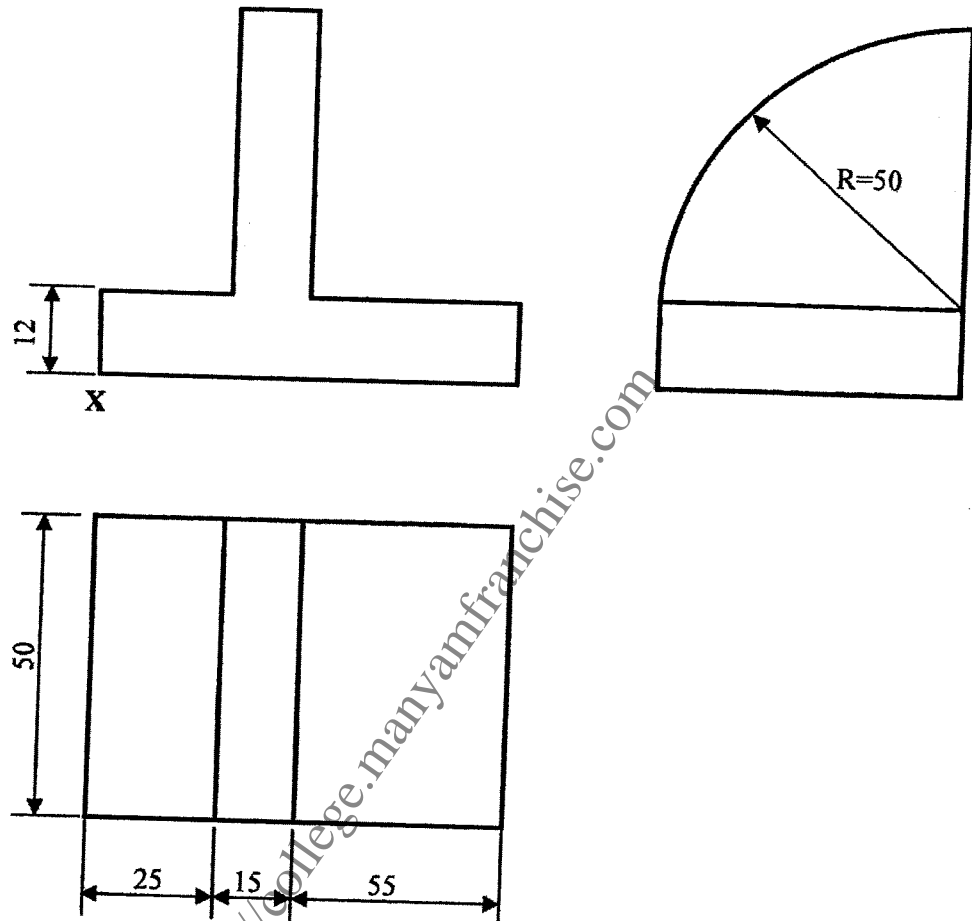


Fig. 3

7. Figure 4 shows the link mechanism of a moving wheel. Plot the locus of point P, 65 mm from R to the sliding surface 15 mm from the centre line of the rotating wheel for one complete revolution of R. (20 marks)

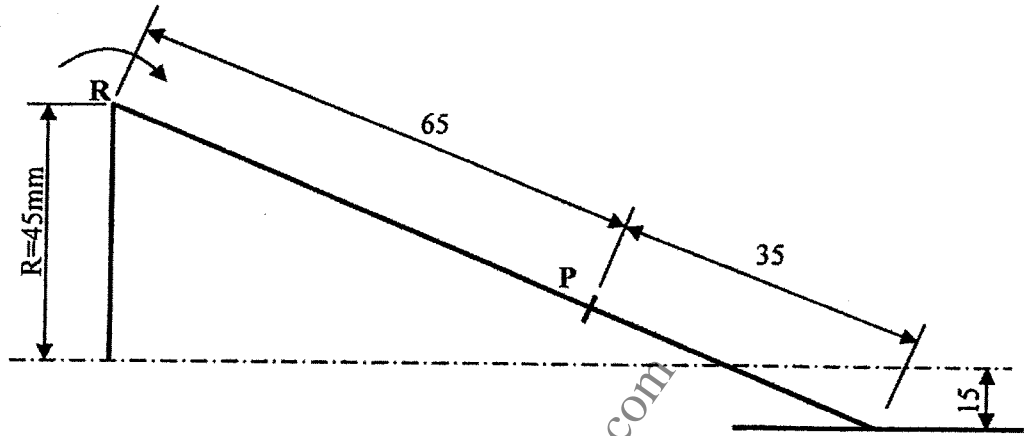


Fig. 4

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8. (a) Divide a line, 135 mm into a ratio of 3:4:5, hence use the lengths thus obtained to draw a triangle. (5 marks)
- (b) Figure 5 shows the position of a circle on a straight line. Trace the locus of a point A on the circle of radius 30 mm as it rolls a long the straight line with out slipping. (15 marks)

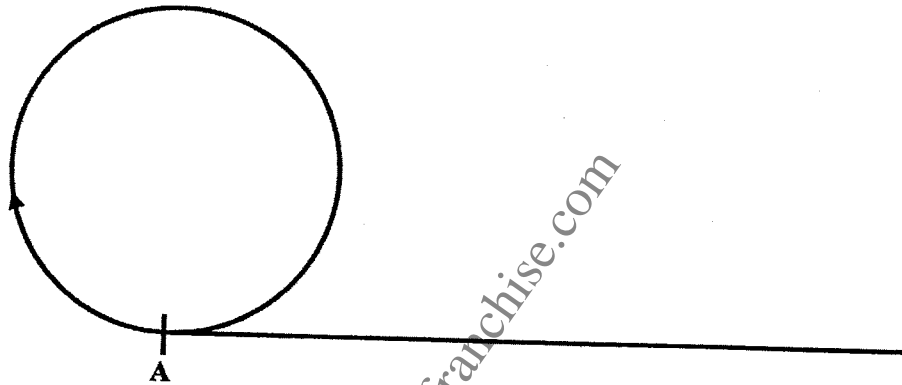


Fig. 5