SCAN

Name _____ Index No. _____/_____

Candidate's Signature _____

Date _____

2705/105
2707/105
2709/105
BUILDING CONSTRUCTION 1,
TECHNICAL DRAWING AND
CONSTRUCTION PLANT
June/July 2015
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING TECHNOLOGY
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE
MODULE I

BUILDING CONSTRUCTION 1, TECHNICAL DRAWING AND CONSTRUCTION PLANT

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of examination in the spaces provided above.
You should have a scientific calculator and drawing paper size A3 for this examination.
*This paper consists of **EIGHT** questions in **THREE** sections: **A**, **B** and **C**.*
*Answer any **TWO** questions from section **A**, **TWO** questions from section **B** and **ONE** question from section **C** in the spaces provided in this question paper.*
All questions carry equal marks.
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1	20	
	2	20	
	3	20	
B	4	20	
	5	20	
	6	20	
C	7	20	
	8	20	
		Total Score	

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.

Turn over

SECTION A: BUILDING CONSTRUCTION I

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

1. (a) Explain the importance of sub-soil investigation of a site. (3 marks)

   (b) (i) State **three** factors to consider when designing a stepped foundation.

   (ii) Sketch and label a section through a foundation on a slopping site. (7 marks)

   (c) State:

   (i) **Three** causes of foundation failure;

   (ii) **Four** factors that determine timbering to trenches. (7 marks)

   (d) Illustrate the use of continuous tubular rail as a barrier to excavations. (3 marks)

2. (a) State **five** advantages of cross-walls. (5 marks)

   (b) Differentiate between party and separating walls. (4 marks)

   (c) Explain the purpose for dimensional co-ordination in the construction industry. (3 marks)

   (d) With the aid of labelled sketches, state the function of the following:

   (i) Door frame;
   (ii) Door lining. (8 marks)

3. (a) With aid of sketches show the minimum requirements for chimney stack projection in the following:

   (i) Ridge of a roof;
   (ii) One slope of a roof;
   (iii) Flat roof. (9 marks)

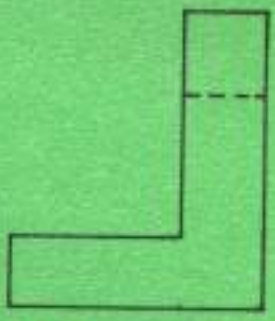
   (b) With the aid of a sketch, describe the construction of a solid ground floor. (11 marks)

SECTION B: TECHNICAL DRAWING

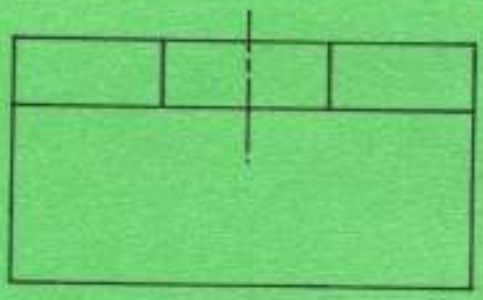
*Answer **TWO** questions from this section.*

4. (a) Figure 01 shows the plan, front elevation and end elevation of an object. Using free hand sketch draw the pictorial view of the object. (5 marks)

FRONT ELEVATION



END ELEVATION



PLAN

Fig 01

(b) Inscribe a circle to pass through given points A, B and C in figure 02. AB = 100 mm, BC = 140 mm and angle ABC = 90°. (9 marks)

Fig. 02

(c) Draw a tangent to two circles 80 mm diameter and 100 mm diameter respectively and with centres 120 mm apart as shown in figure 03. (6 marks)

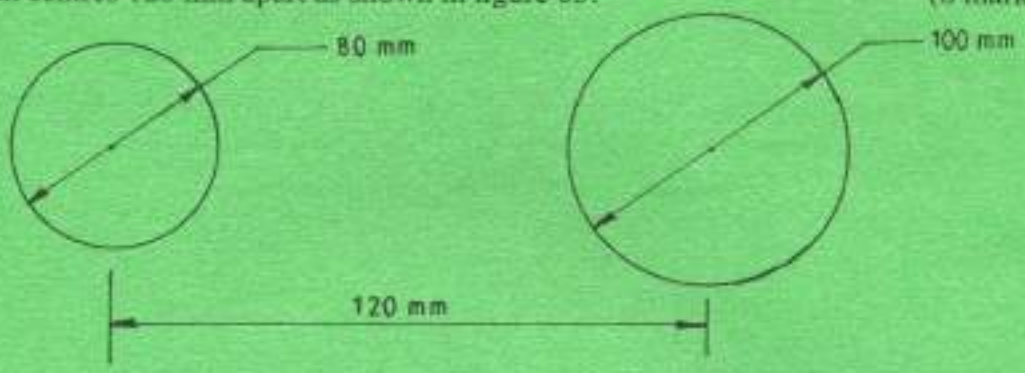


Fig. 03

5. Figure 04 shows a frustrum of hexagonal pyramid.

Draw:

(i) the development
(ii) the plan
(iii) elevation R
(iv) the true shape
(v) the given elevation. (20 marks)

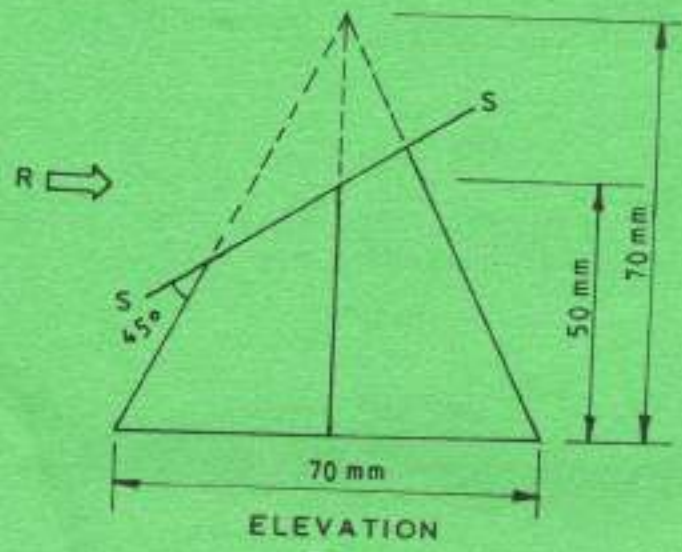


Fig. 04

6. (a) Figure 05 is a machine block 20 mm thick. Draw the auxiliary views A and B.

(8 marks)

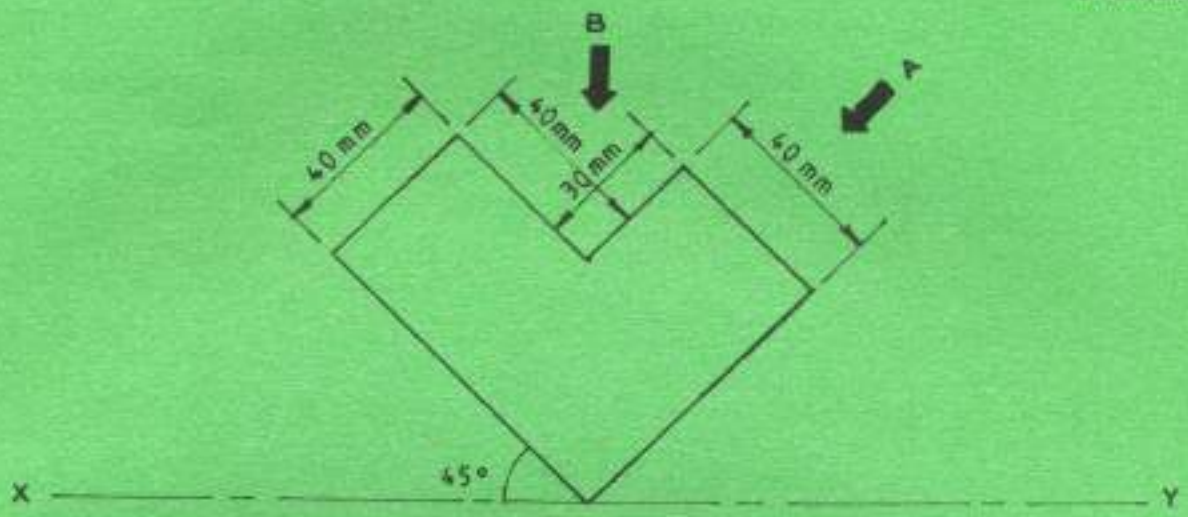


Fig. 05

(b) Determine the true length of a line AB = 100 mm inclining at 45° to the horizontal plane as shown on figure 06.

(4 marks)

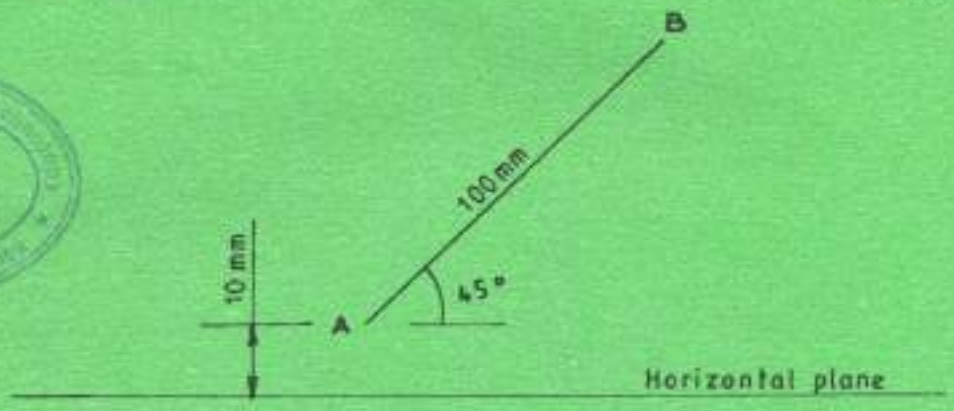
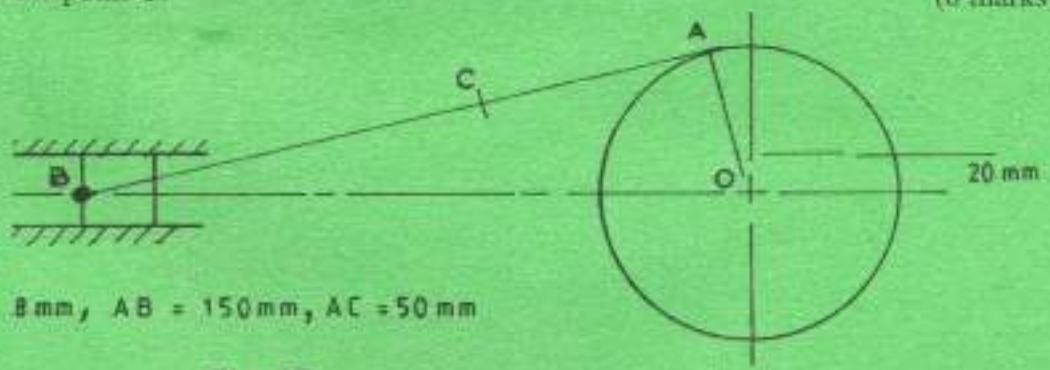


Fig. 06

(c) Figure 07 shows a slider mechanism. Draw the full size of the component and plot the locus of the point C.

(8 marks)



8mm, AB = 150mm, AC = 50mm

Fig. 07

SECTION C: CONSTRUCTION PLANT

*Answer **ONE** question from this section.*

7. (a) State **four** reasons for using construction plant. (4 marks)

(b) Outline **five** factors affecting the selection of an excavating plant. (10 marks)

(c) Sketch and label a 'dragline'. (6 marks)

8. (a) State **three** factors to be considered when preparing for drilling and blasting operations. (3 marks)

(b) Illustrate **three** types of circuits used in blasting operations (6 marks)

(c) Outline the procedure of field maintenance of construction plants. (5 marks)

(d) Explain the following terms as used in truck capacities:

(i) payload;
(ii) struck volume;
(iii) heaped volume. (6 marks)