2705/105
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2709/105
BUILDING CONSTRUCTION I, TECHNICAL DRAWING AND CONSTRUCTION PLANT
Oct./ Nov. 2018
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE

MODULE I

BUILDING CONSTRUCTION I, TECHNICAL DRAWING AND CONSTRUCTION PLANT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Drawing paper size A3;
Drawing instruments.
*This paper consists of **EIGHT** questions in **THREE** sections; **A**, **B** and **C**.*
*Answer **FIVE** questions, choosing **TWO** questions from section **A**, **TWO** questions from section **B** and **ONE** question from section **C** in the answer booklet provided and drawing paper where necessary.*
Maximum marks for each part of a question are as 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.

Turn over

SECTION A: BUILDING CONSTRUCTION 1

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

1. (a) Highlight the building process. (4 marks)

(b) Differentiate "distributed soil sample" from "undistributed soil sample". (4 marks)

(c) Illustrate each of the following methods of levelling stating one disadvantage of each:

(i) cut;
(ii) fill.

(5 marks)

(d) With the aid of labelled sketches, explain three methods of fixing door frames. (12 marks)

2. (a) With the aid of labelled sketch, outline the procedure of setting out using the 3:4:5 method. (7 marks)

(b) With the aid of a labelled sketch, explain the electro-osmosis method of dewatering. (7 marks)

(c) Design and sketch a pictorial square pad foundation using the following data.
Soil bearing capacity 150 kN/m^2
Column load 200 kN
Depth of column base 300 mm

(6 marks)

(d) Outline **five** characteristics of damp proof course. (5 marks)

3. (a) (i) With the aid of a sketch, explain masonry wall construction.

(ii) State **three** functions of motar.

(6 marks)

(b) (i) Explain **two** types of coordination in building construction.

(ii) State **three** aims of dimensional coordination.

(7 marks)

(c) Explain the procedure of inspecting a smoky chimney. (7($\frac{1}{2}$) marks)

(d) (i) Define the term "honey comb sleeper walls."

(ii) Outline the procedure of constructing honey comb sleeper walls.

4($\frac{1}{2}$) marks)

SECTION B: TECHNICAL DRAWING

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

4. **Figure 1** shows the front elevation of three cylinders interpenetrating each other centrally on plan. Using first angle,

(a) complete the front elevation;

(b) draw the development of cylinder B.

(15 marks)

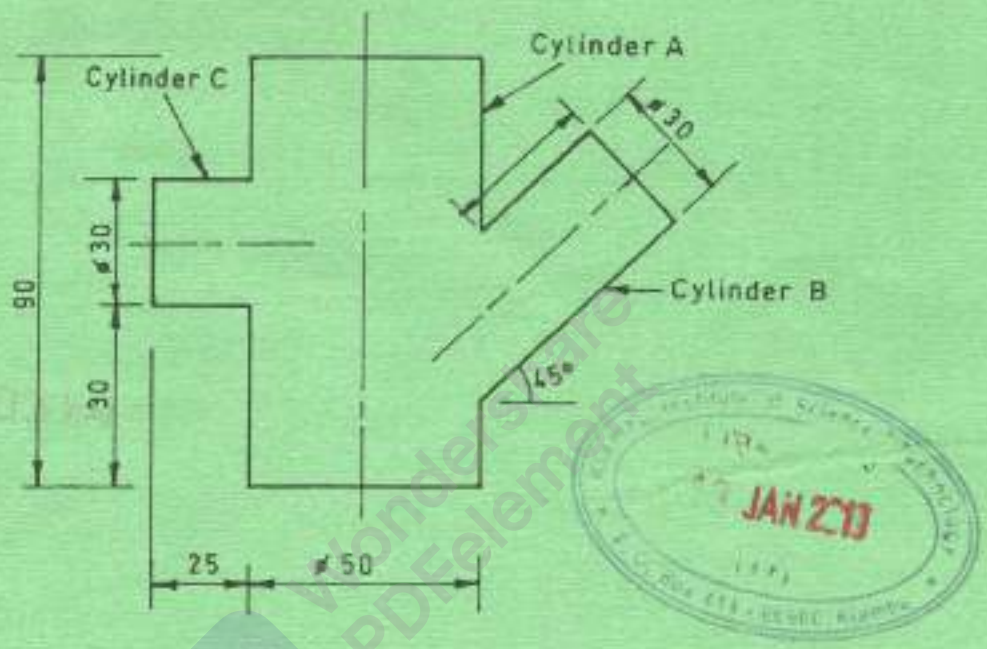

Fig. 1

5. The arm OA rotates in a full circle clockwise about its end O. The link AB is pivoted at A to AO. The end B is constrained to move by a slider in a straight line along OC. Find the locus of point P on AB using the following data: (15 marks)

AB = 55 mm
AP = 115 mm
OA = 30 mm
OC = 170 mm

6. **Figure 2** shows orthographic views of an object. Draw the object in isometric projection. (15 marks)

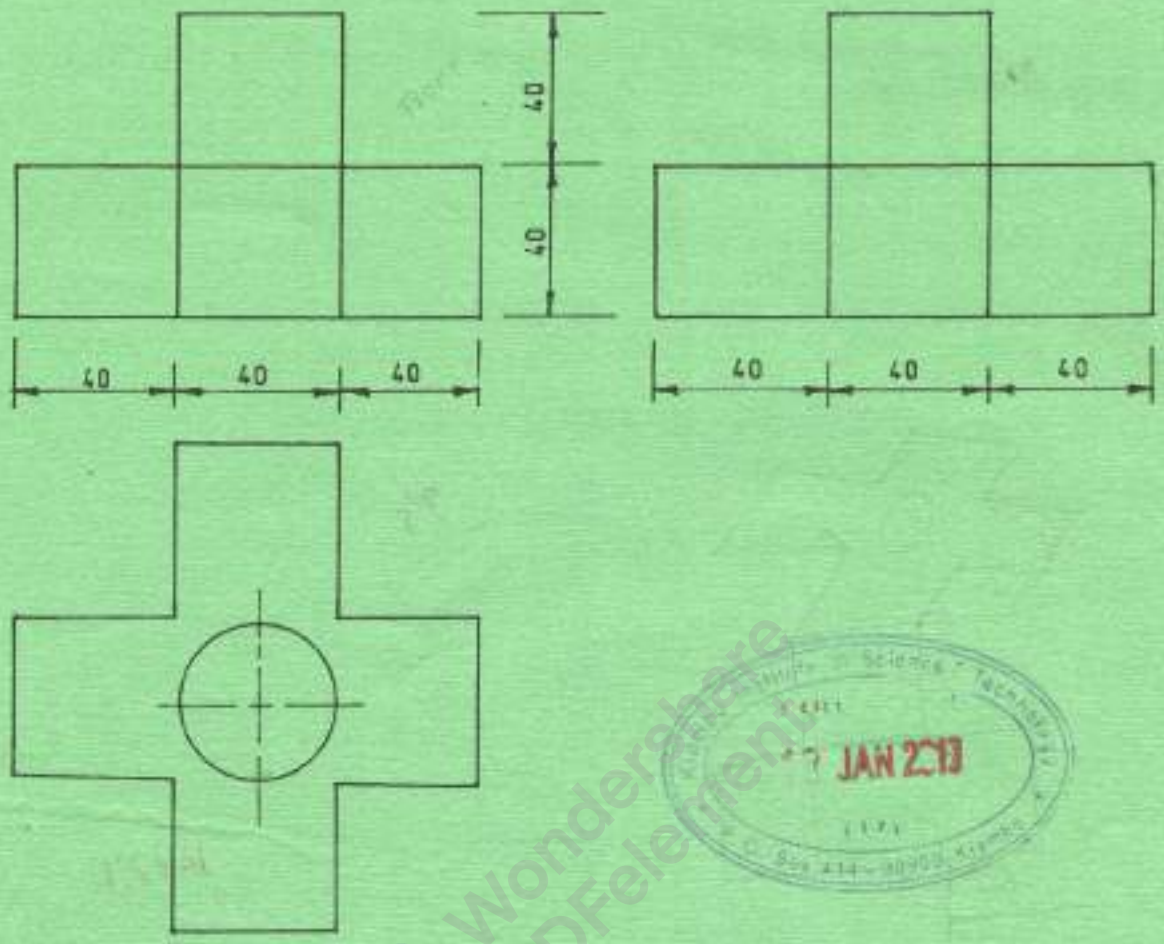

Fig. 2

SECTION C: CONSTRUCTION PLANT

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

7. (a) State **three**:

(i) limitations of drop hammers;
(ii) factors to consider in the selection of pile hammers. (6 marks)

(b) Outline **four** purposes of plant maintenance records. (4 marks)

(c) With the aid of plan and elevation sketches, describe the operation of a pneumatic tyred roller stating **three** conditions under which it can be suitably used. (10 marks)

8. (a) With the aid of labelled sketch, describe the following parts of a paver: (8 marks)

(i) screed;
(ii) tractor unit.

(b) With the aid of a labelled sketch, explain the operation of a jaw crusher. (7 marks)

(c) Outline:

(i) **three** factors which affect productivity of trucks;

(ii) **two** factors that determine selection of a pump.

(5 marks)

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