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**BUILDING CONSTRUCTION I,
TECHNICAL DRAWING AND
CONSTRUCTION PLANT**

Oct./Nov. 2016

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING TECHNOLOGY
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:

Answer booklet;

Scientific calculator;

Drawing paper size A3.

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.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 6 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

Answer **TWO** questions from this section.

1. (a) State **two** reasons for sub-soil investigation. (2 marks)
- (b) With the aid of sketches, state the procedure of setting out a corner of a building using the 3:4:5 method. (9 marks)
- (c) (i) State **three** factors that may influence the type of timbering to excavations.
(ii) Outline **six** causes of failure of timbering in trenches. (9 marks)
2. (a) Distinguish between load bearing and non-load bearing walls. (4 marks)
- (b) Explain each of the following terms as used in wall construction:
(i) masonry;
(ii) bonding;
(iii) mortar;
(iv) random rubble. (8 marks)
- (c) State **two** reasons for openings in walls. (2 marks)
- (d) Sketch and label the exclusion of dampness in the following elements of a building:
(i) ground floor slab;
(ii) parapet walls. (6 marks)
3. (a) Explain each of the following terms as used in fireplace:
(i) hearth;
(ii) gathering;
(iii) pargetting;
(iv) breast. (8 marks)
- (b) Sketch and label a chimney projection through each of the following, giving building code requirements for each:
(i) ridge of a roof;
(ii) flat roof;
(iii) slope of a roof. (9 marks)

- (c) Sketch and label the details of a door lining in a wall opening. (3 marks)

SECTION B: TECHNICAL DRAWING

Answer *TWO* questions from this section.

4. (a) (i) Draw three circles of radii 25 mm, 18 mm and 12 mm respectively, all touching each other externally. (4 marks)
- (ii) Construct a diagonal scale 40 mm = 1000 mm, 3 metres long, to measure 10 mm. On the scale show a measurement of 2580 mm. (8 marks)
- (b) Construct two turns of the helix of a point P moving round the cylinder in figure 1 if for each turn the cylinder rises 40 mm. (8 marks)

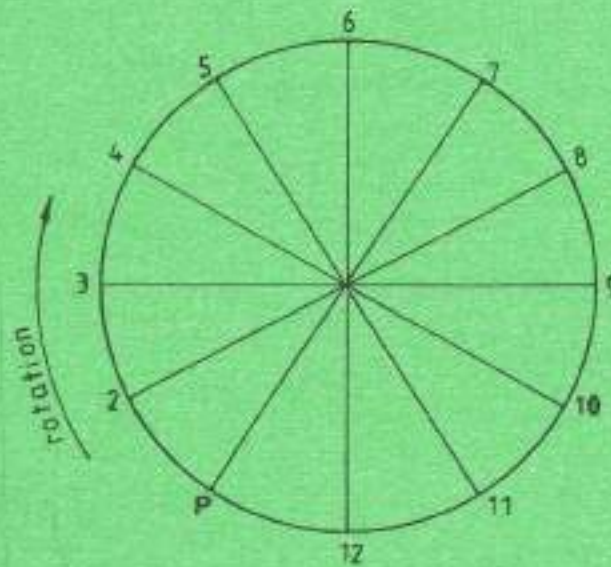


Fig. 1

5. Figure 2 is a pictorial of a shaped object. Draw the object in first angle orthographic projection with the front elevation looking in the direction shown by the arrow. (20 marks)

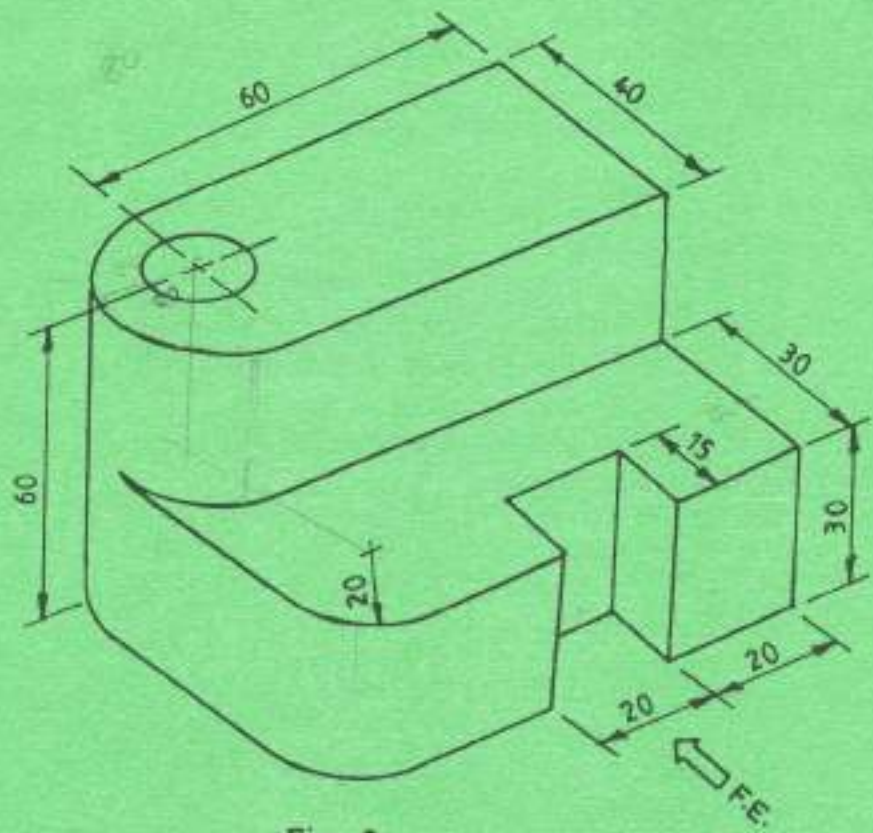


Fig. 2

6. Figure 3 shows the elevations of an object. Draw the figure using one-point perspective, if the vanishing point is fixed at 150 mm to the right and on the same level as point X. (20 marks)

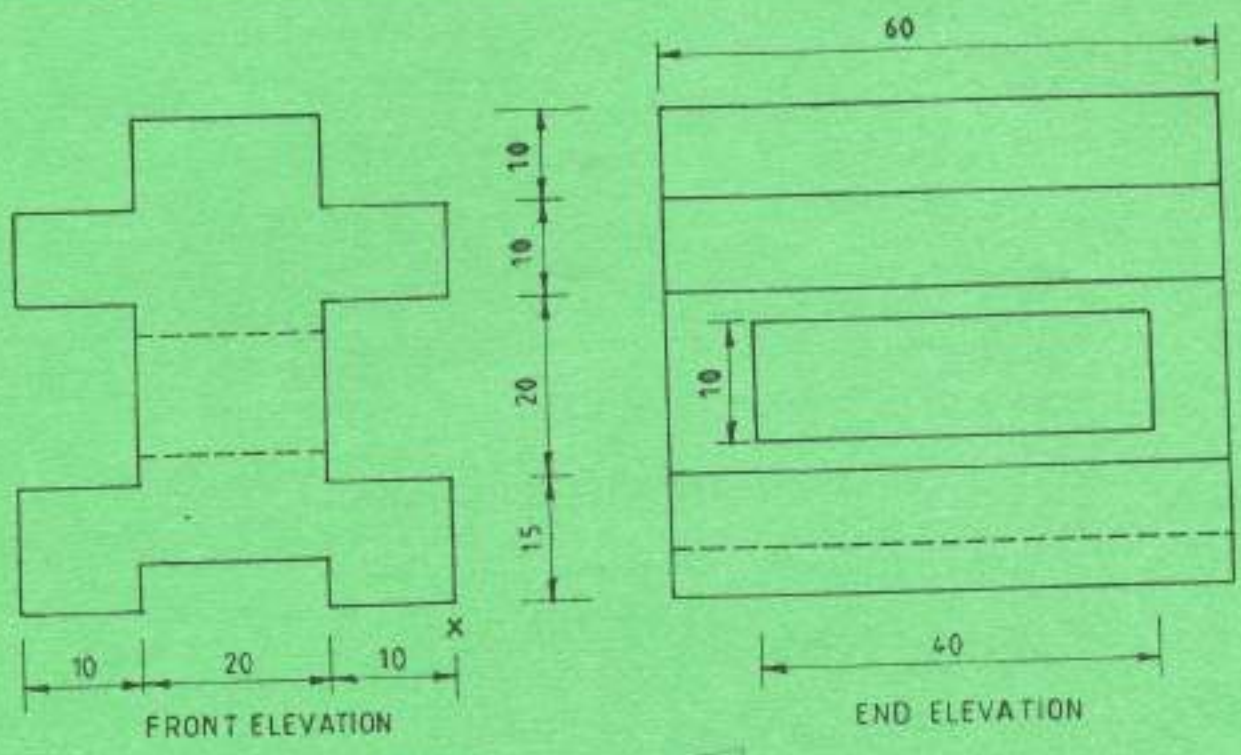


Fig. 3

SECTION C: CONSTRUCTION PLANT

Answer ONE question from this section.

- (a) State the four factors affecting the productivity of an excavator. (4 marks)
- (b) Sketch and label a "Backactor". (6 marks)
- (c) Outline five advantages of using ready mixed concrete. (10 marks)

- 8. (a) Explain the following types of plant maintenance: (9 marks)
 - (i) routine;
 - (ii) preventive;
 - (iii) planned.
- (b) State four classifications of mobile cranes. (4 marks)

- (c) Differentiate between elevators and conveyors. (4 marks)
- (d) State **three** factors that influence effective compaction of a plant. (3 marks)

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