

2707/203
CONSTRUCTION MANAGEMENT I, WORKSHOP
TECHNOLOGY II AND WATER SUPPLY
June/July 2023
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN CIVIL ENGINEERING

MODULE II

CONSTRUCTION MANAGEMENT I, WORKSHOP
TECHNOLOGY II AND WATER SUPPLY

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/scientific calculator.

This paper consists of EIGHT questions in THREE sections; A, B and C.

Answer any FIVE questions; choosing THREE questions from section A, ONE question from section B and ONE question from section C.

All questions carry equal marks.

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.

SECTION A: CONSTRUCTION MANAGEMENT I

Answer **THREE** questions from this section.

1. (a) State **four** roles of the Engineers Board of Kenya. (4 marks)
- (b) Differentiate between 'turnkey contractors' and speculative contractors'. (4 marks)
- (c) Explain **six** functions of management. (12 marks)
2. (a) Outline **four** factors considered in procuring of office equipment. (6 marks)
- (b) Explain **three** types of organizational relationship. (6 marks)
- (c) Explain **four** principles of an organization. *Simplicity, coordination, flexibility* (8 marks)
3. (a) State **four** reasons for providing a sign board for a construction site. (4 marks)
- (b) Outline **four** methods of tendering. *selective, speculative, bidding* (6 marks)
- (c) Explain **five** factors considered in positioning material storage areas in a construction site. (10 marks)
4. (a) Describe **five** types of contracts: *lump sum, cost fixed, cost price* (10 marks)
- (b) Explain **five** remedies to breach of contract. *rejection, award* (10 marks)

SECTION B: WORKSHOP TECHNOLOGY II (ELECTRICAL INSTALLATION)

Answer ONE question from this section.

5. (a) State **four** advantages of each of the following in electrical power supply;
- (i) National grid system;
 - (ii) Hydro - electric power.
- (8 marks)
- (b) With the aid of labelled sketches, differentiate between a wiring and schematic diagram in electrical installation.
- (12 marks)
6. (a) State **four** factors considered when estimating cost of material for electrical installation.
- (4 marks)
- (b) Explain each of the following terms as used in electrical installation:
- (i) circuit;
 - (ii) earthing;
 - (iii) conductor.
- (6 marks)
- (c) Distinguish 'intermediate switch' from 'one-way switch'.
- (4 marks)
- (d) Explain **three** sources of electrical energy.
- (6 marks)
- water
wind
solar*

SECTION C: WATER SUPPLY

Answer *ONE* question from this section.

7. (a) Outline **four** factors considered in the selection of hydraulic turbines. (6 marks)
- (b) Differentiate between 'gauge pressure' and 'atmospheric pressure'. (4 marks)
- (c) **Figure 1** shows an inclined pipe line. Determine the pressure head at C using the data provided.

Data

Pressure of water at A = 3.5 Kg/m^2

Frictional coefficient = 0.005

Discharge at A = 110 litres/sec.

(10 marks)

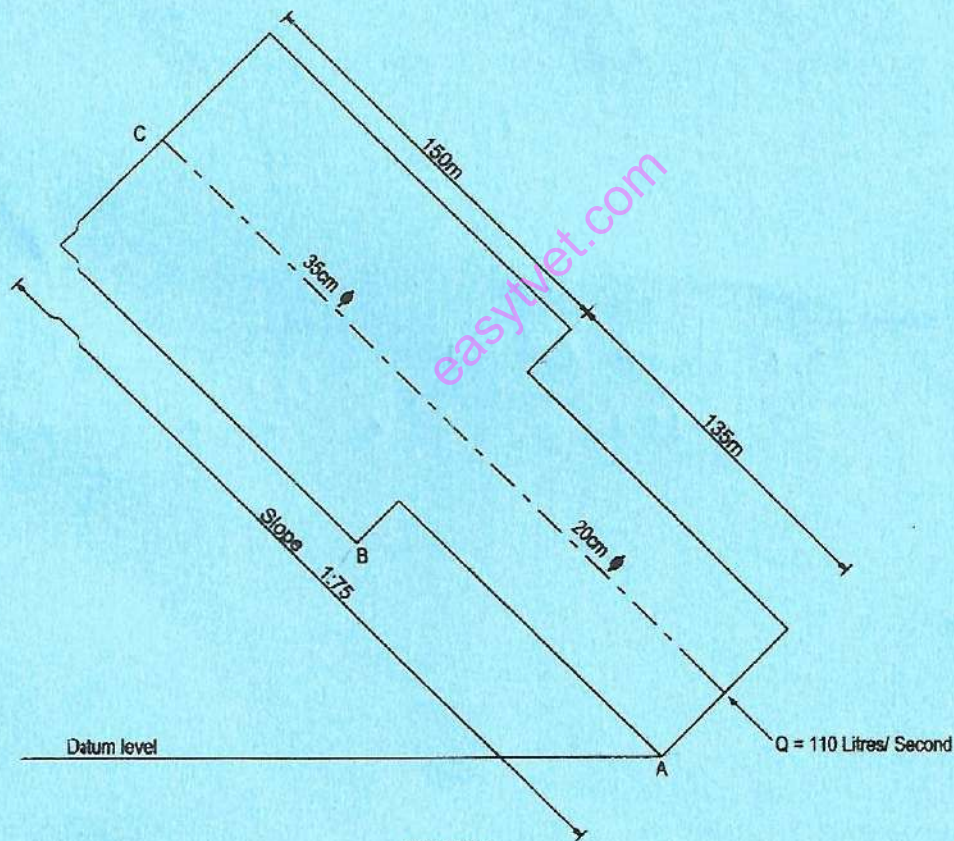


FIGURE 1

8. (a) Explain each of the following terms as used in hydrology:
- (i) precipitation;
 - (ii) evaporation.
- (4 marks)
- (b) Differentiate between each of the following stages of water treatment:
- (i) coagulation and flocculation;
 - (ii) sedimentation and filtration.
- (8 marks)
- (c) **Figure 2** shows a horizontal venturi-meter. Using the figure, derive the discharge equation. (8 marks)

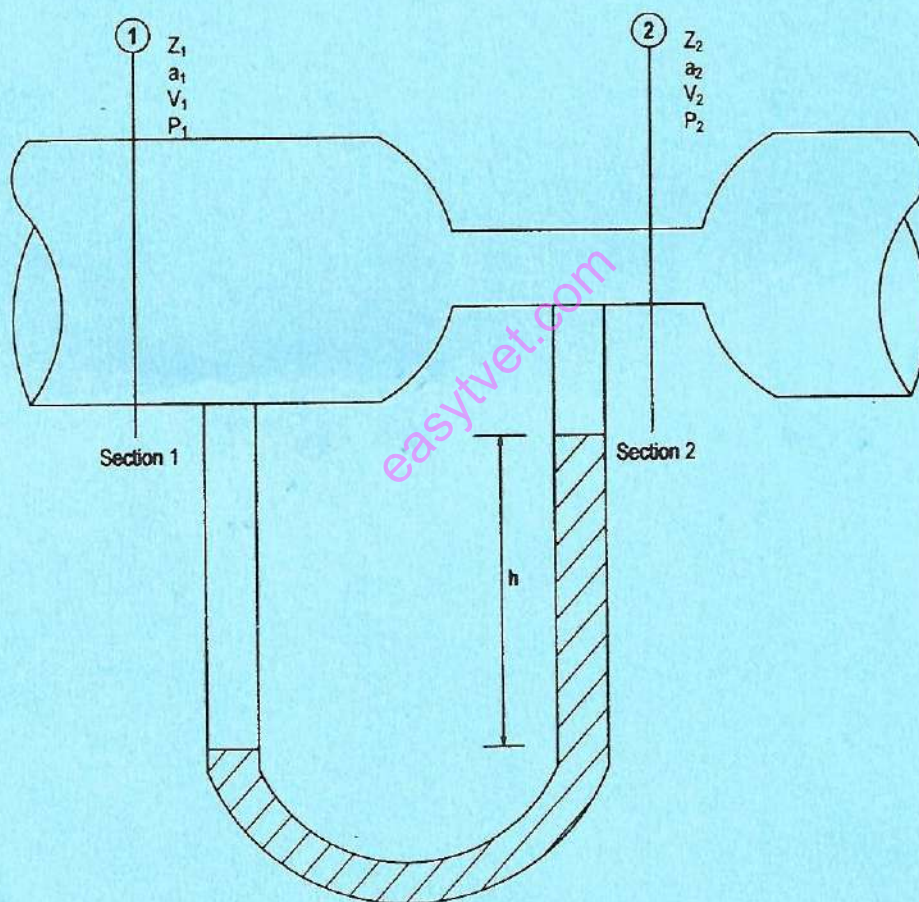


FIGURE 2

THIS IS THE LAST PRINTED PAGE.