

2707/203

CONSTRUCTION MANAGEMENT I, WORKSHOP  
TECHNOLOGY II AND WATER SUPPLY

Oct./Nov. 2022

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;*

*Drawing instruments;*

*Scientific calculator.*

*The 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) Outline **four** requirements of an effective method of communication. (6 marks)
- (b) Explain **four** roles of management in a construction firm. (8 marks)
- (c) Explain **three** principles of organization. (6 marks)
2. (a) State **four** contents of "a condition of contract" document. (4 marks)
- (b) Explain each of the following types of contracts in the construction industry:
- (i) running;
  - (ii) turn key;
  - (iii) negotiated. (6 marks)
- (c) (i) Explain the term 'discharge of contract' in law.
- (ii) Explain **four** factors which make a contract invalid. (10 marks)
3. (a) State **six** critical information shown on a site layout. (6 marks)
- (b) Explain **five** factors which affect job layout. (10 marks)
- (c) Explain each of the following remedies to a breach of contract:
- (i) injunction;
  - (ii) damages. (4 marks)
4. (a) State **four** functions of the Architectural Association of Kenya. (4 marks)
- (b) State **three** reasons for a choosing each of the following method of tendering.
- (i) open tendering;
  - (ii) serial tendering. (6 marks)
- (c) Illustrate each of the following types of organizational structures and state **two** advantages of each.
- (i) military;
  - (ii) functional. *Enhance authoring  
Heath* (10 marks)

**SECTION B: WORKSHOP TECHNOLOGY II (ELECTRICAL)**

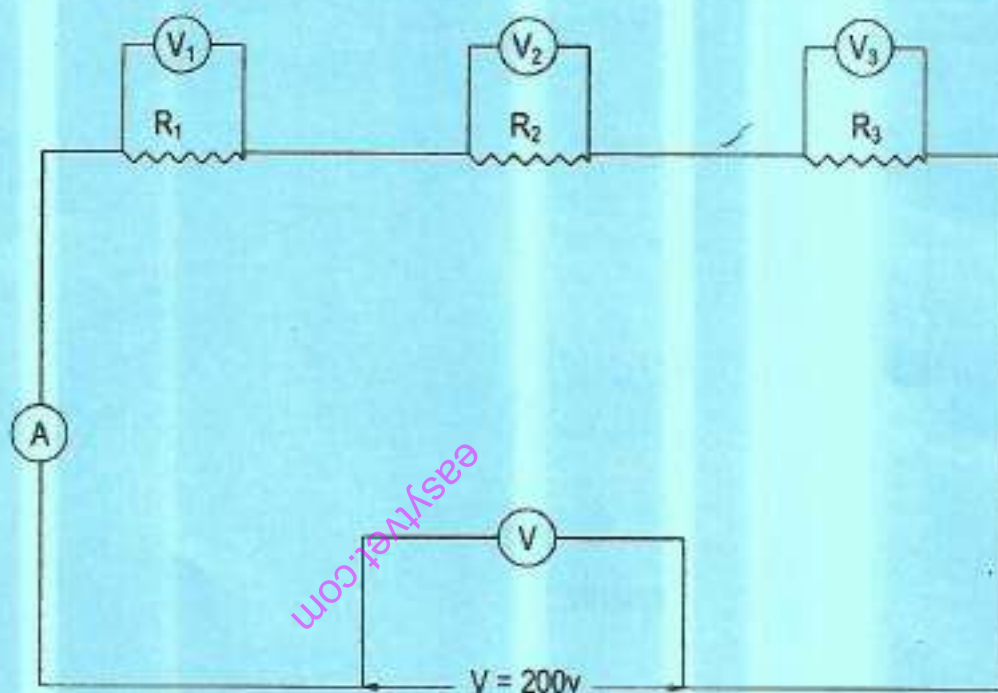
Answer **ONE** question from this section.

5. (a) Figure 1 shows an electrical circuit connected in series. Using the data provided, determine each of the following:

- (i) total current (I);
- (ii)  $V_2$  and  $V_3$ ;
- (iii) value of resistor  $R_3$ .

Data:  $R_1 = 20\Omega$       $R_2 = 10\Omega$

(10 marks)



**FIGURE 1**

- (b) State **five** factors that affect cable rating. (5 marks)

- (c) State **five** activities involved in an inspection of an electric circuit. (5 marks)

6. (a) State **five** advantages of trunking in electrical installation. (5 marks)

- (b) State **four** IEEE regulations relating to a ring domestic circuit. (4 marks)

- (c) Explain **three** disadvantages of solar system of power supply. (6 marks)

- (d) Sketch and label a domestic consumer control unit. (5 marks)

*Handwritten notes:*  
 Neatness  
 Proper use of cable  
 Safety and  
 collection of  
 cables  
 enhance durability

## SECTION C: WATER SUPPLY

Answer **ONE** question from this section.

7. (a) Explain each of the following terms used in the hydrological cycle:

- (i) sublimation;
- (ii) precipitation;
- (iii) infiltration.

(6 marks)

(b) Explain **three** factors considered in design of a water treatment plant.

(6 marks)

(c) Figure 2 shows a rectangular notch. If the breadth =  $b$ , total height =  $H$  and discharge coefficient =  $C_d$ , derive the equation for discharge. (8 marks)

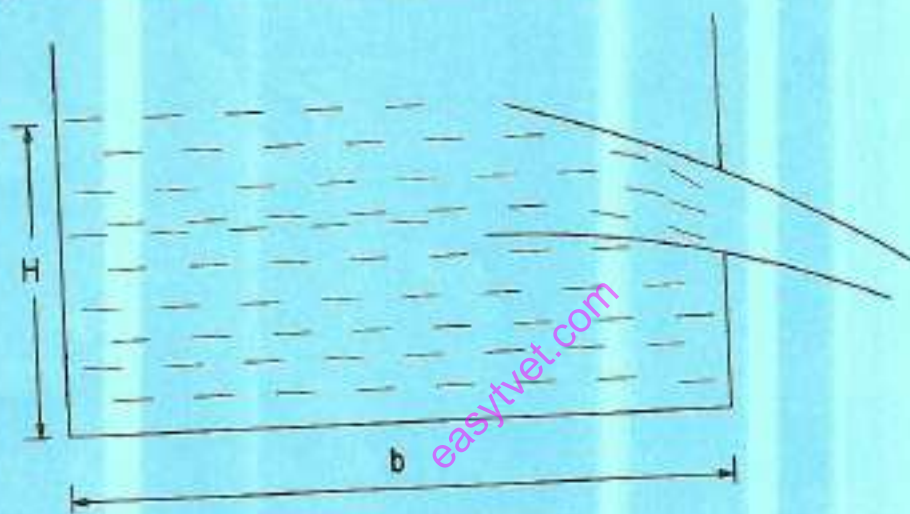


FIGURE 2

8. (a) Explain each of the following in water treatment layout.

- (i) screening;
- (ii) coagulation;
- (iii) disinfection;
- (iv) filtration.

(8 marks)

(b) State **five** considerations in the selection of a pump.

(5 marks)

(c) (i) State Pascal's law.

(ii) Figure 3 shows a hydraulic system. Determine the force at point B.

(7 marks)

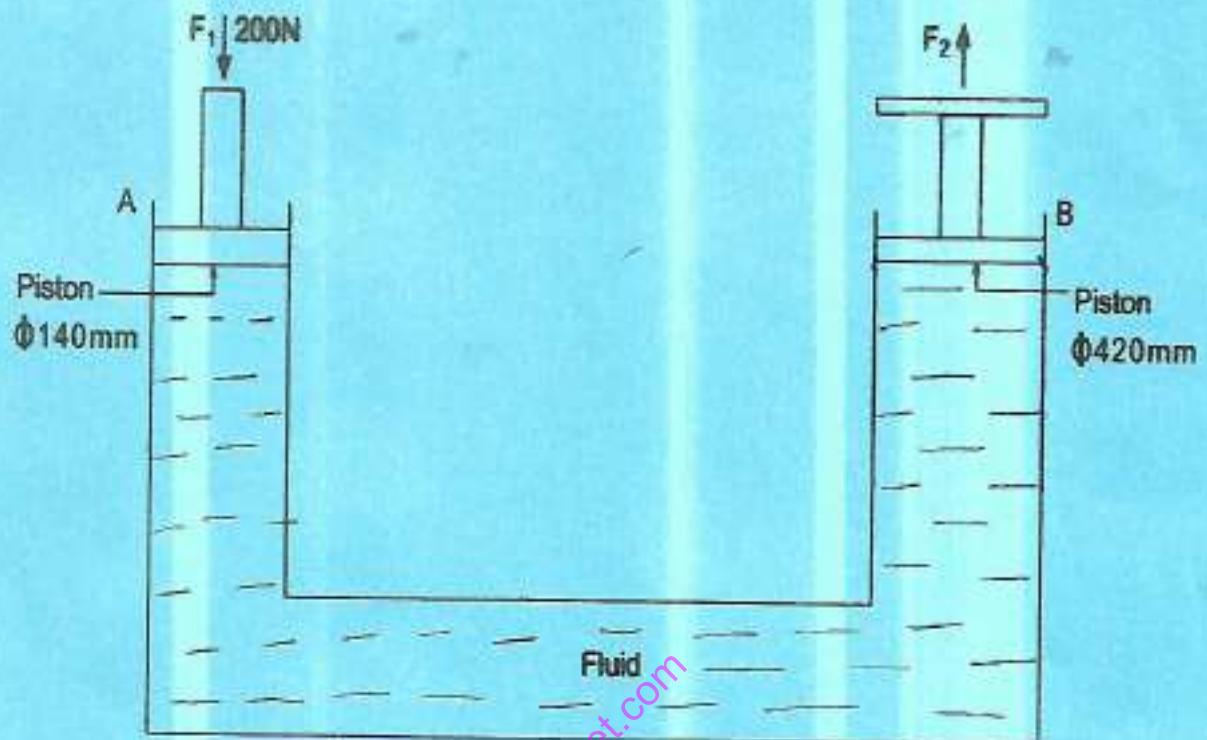


FIGURE 3

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