2707/203
CONSTRUCTION MANAGEMENT I,
WORKSHOP TECHNOLOGY II AND
WATER SUPPLY
Oct./Nov. 2018
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;
scientific calculator.
*This paper consists of **EIGHT** questions in **THREE** sections **A**, **B** and **C**.*
*Answer **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.

Turn over

SECTION A: CONSTRUCTION MANAGEMENT I

*Answer **THREE** questions from this section.*

1. (a) Explain **three** roles of the following parties to a contract:

   (i) client;
   (ii) quantity surveyor;
   (iii) contractor.

   (9 marks)

   (b) Explain the following functions of management:

   (i) planning;
   (ii) organizing;
   (iii) controlling;
   (iv) co-ordinating.

   (8 marks)

   (c) State **three** reasons that make planning an important function of an organization.

   (3 marks)

2. (a) Define the following terms as used in management:

   (i) organization structure;
   (ii) strategy;
   (iii) policy;
   (iv) motivation.

   (4 marks)

   (b) (i) Explain the concept of "span of control" in an organization.

   (ii) State **four** factors which influence the span of control.

   (12 marks)

   (c) Outline **four** distinct functions a contract documentation plays in the construction process.

   (4 marks)

3. (a) (i) Outline **three** filing methods used in offices.

   (ii) State **five** general principles of filing.

   (8 marks)

(b) (i) Explain the benefits of site layout planning.

(ii) Explain the importance of the following site layout planning elements:

(I) safety;
(II) site accessibility;
(III) security.

(12 marks)

4. (a) Explain the following in relation to construction contract:

(i) defects liability period;
(ii) preliminaries;
(iii) interim certificate;
(iv) bill of quantities;
(v) retention fund.

(10 marks)

(b) Describe each of the following tendering methods:

(i) open tendering;
(ii) sclective tendering;
(iii) package deal.

(6 marks)

(c) State **four** roles of local authorities in building works. (4 marks)

SECTION B: WORKSHOP TECHNOLOGY II

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

5. (a) State **five** components of a safe and efficient electrical circuit. (5 marks)

(b) With the aid of a diagram, outline the function of each of the components of a consumer control unit. (12 marks)

(c) State the instruments used to measure the following:

(i) electric current;
(ii) potential difference;
(iii) resistance.

(3 marks)

6. (a) State the **five** classifications of electrical accessories giving **one** example of each. (5 marks)

(b) Outline **three** factors that affect the current rating of cables. (3 marks)

(c) Sketch a diagram of a P.V.C insulated and sheathed twin with earth flat cable and state the function of each part. (6 marks)

(d) With the aid of a sketch describe the looping - in method of wiring a lighting final sub-circuit in a conduit wiring system. (6 marks)

SECTION C: WATER SUPPLY

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

7. (a) Define each of the following:

(i) atmospheric pressure;
(ii) gauge pressure;
(iii) absolute pressure.

(3 marks)

(b) With the aid of a sketch, explain the Thiessen polygon method of determining areal rainfall. (6 marks)

(c) Determine the discharge through a partially submerged large rectangular orifice shown in **figure 1**. (Take Cd = 0.63) (6 marks)

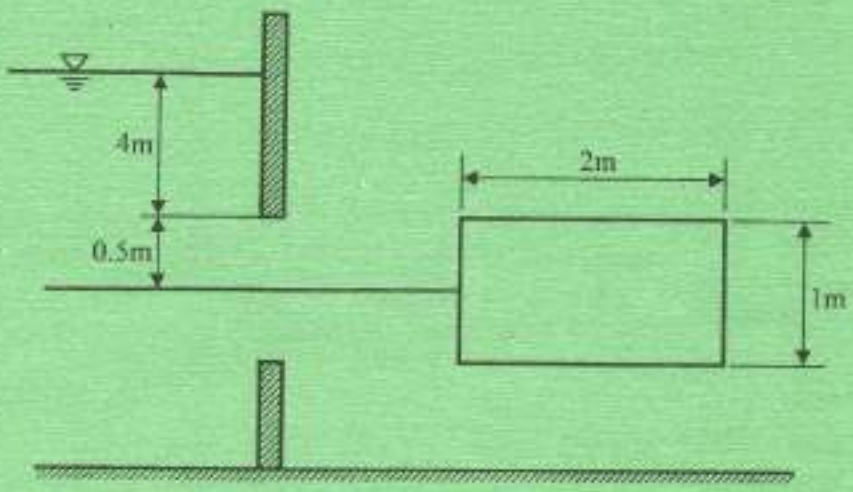

Fig. 1

(d) An isosceles triangle of base 3 metres, and altitude 6 metres, is immersed vertically in water, with its axis of symmetry horizontal as shown in the **figure 2**. If head of water above its axis is 9 metres, determine the total pressure on the plate and the centre of pressure acting on the plate. (5 marks)

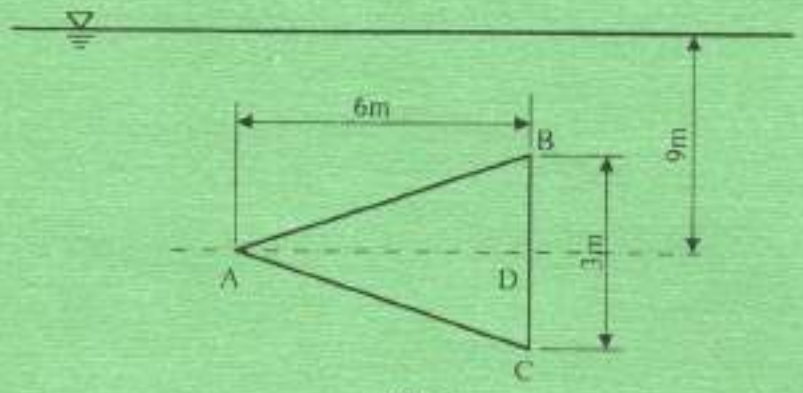

Fig. 2

8. (a) With the aid of sketches, describe bar screens water treatment. (7 marks)

(b) Outline **four** factors considered in selecting a water intake site. (4 marks)

(c) Explain the importance of coagulation flocculation processes in water treatment. (5 marks)

(d) Compare reciprocating and centrifugal pumps in respect to the following characteristics:

(i) speed;
(ii) head;
(iii) size;
(iv) cost.

(4 marks)

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